IGEL Universal Management Suite v4

User manual

UMS4

Universal Management Suite

Important Information

Please note some important information before reading this documentation.

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About this document

This document describes the procedure for installing and using the IGEL Universal Management Suite (UMS) based on Version 4.09.100. The firmware parameters for the thin client are described in greater detail in the relevant IGEL Universal Desktop or IGEL Zero manual, even if these parameters can be configured via the UMS.

This document assumes that a fully functional installation of the IGEL UMS as well as at least one IGEL thin client which is to be managed are available.

IGEL one thin clients may be registered in the UMS, but not configured.

This manual is divided into the following sections:

IGEL Universal Management Suite (page 7)	Attributes and components of the UMS
Installation (page 11)	Requirements, installation, updates, external DB systems
First steps (page 18)	Establishing a connection to the server, registering
Working with the IGEL UMS (page 26)	Console window and Administrator
Managing, (page 29)	configuring and mirroring thin clients; firmware licenses
Creating and (page 61)	configuring profiles; user profiles (IGEL Shared Workplace)
Creating and (page 94)	saving views
Setting up planned (page 100)	tasks, details, schedule, assignment, results
Registering, (page 107)	transferring and removing files on the server and client
Preparing, searching for, (page 110)	downloading, importing and assigning Universal Firmware Updates
Managing certificates (page 114)	Installing server and console certificates
Administration area (page 116)	UMS Server, global configuration
Importing Active Directory users (page 125)	Symbols, searching in the AD, import results list
Administrator accounts and access rights (page 129)	Administrators, groups, authorizations
User logs (page 136)	(general), administration, logging, filter settings
Log files and support (page 140)	Help
Appendix (page 141)	UMS High Availability Extension, Universal Customization Builder

Formatting and meanings

The following formatting is used in the document:

Hyperlink	Internal or external links
Proper names	Proper names of products, firms etc.
GUI text	Items of text from the user interface
Menu→Path	(Context) menu paths in systems and programs
`Entry`	Program code or system entries
Keyboard	Commands that are entered using the keyboard

Note regarding operation

Warning: Important note which must be observed

What is new in 4.09.100?

You will find the release notes for the IGEL Universal Management Suite 4.09.100 both as a text file next to the installation programs on our *download server* (*http://myigel.biz/index.php?dir=IGEL_UNIVERSAL_MANAGEMENT_SUITE/*) and in our *Knowledge Base* (*http://edocs.igel.com/*).

The most important functional change in this version is the *master profile* (page 76) concept which makes configuring the thin clients even more flexible and straightforward thanks to more easily manageable administrator rights.

In addition, the IGEL Universal Management Suite can now *send views via e-mail* (page 98) – either with a click or automatically as an *administrative task* (page 119).

UMS now offers the option of allowing connections secured *exclusively with HTTPS (SSL)* (page 38) when communicating with the server.

The Java version used has been updated. Java 1.8.0_40 or newer is now needed to bring up the UMS Console via Java Web Start.

1. IGEL Universal Management Suite

The IGEL Universal Management Suite (UMS) is a user-friendly and highly efficient piece of software which allows you to remote-configure and manage IGEL thin clients. Using the UMS helps to reduce the costs of workstation administration and support. With its open, network-friendly structure, it can be incorporated optimally into an existing company infrastructure.

The IGEL Universal Management Suite sets new standards when it comes to managing modern thin clients. It offers a wide range of features which allow large thin client environments with various configurations to be managed quickly, easily and securely – even across WANs. With its support for a wide range of operating systems, databases and directory services such as Microsoft® Active Directory, the Universal Management Suite can easily be integrated into any existing environment.

Each IGEL thin client comes with a free version of the IGEL Universal Management Suite. When combined with the outstanding IGEL hardware, this gives you the most innovative thin client solution currently available on the market.

An overview of devices supported by the IGEL Universal Management Suite can be found in these FAQs.

1.1. Typical areas of use

- Automatically setting up thin clients with the correct configuration when they go into operation
- Changing the settings of the devices as well as those of the software clients, tools and local logs
- Distributing updates and firmware images
- Diagnostics and support

1.2. Attributes of the IGEL UMS

Quick installation:	An assistant helps you during the installation procedure. As a further option, external database systems can also be used alongside the integrated database.
Straightforward management at the click of a mouse:	Most hardware and software settings can be made with just a few clicks.
Standardized user interface:	The UMS user interface is similar to that for local thin client configuration. The additional remote management functions give the administrator complete control in the familiar, proven environment.
No scripting:	Although scripting is supported, you will only need it for managing the thin client configuration in the most exceptional circumstances.
Asset management:	Automatic capturing of all your hardware information, licensed features and installed hotfixes.
Commentary fields:	For various customer-specific information such as location, installation date and inventory number.
Support for numerous operating systems:	The UMS Server can run on many common versions of Microsoft® Windows® Server and Linux.
Access independent of the operating system:	The UMS Console is Java-based and allows system administration via any device with the Java Runtime Environment – even without a local installation of the UMS Console (Java Web Start), see *Installation requirements* (page 144).
Encrypted communication:	Certificate-based SSL-encrypted communication between remote management servers and clients to prevent unauthorized reconfiguration of the devices.
Failsafe update function:	If the thin client fails while the update is in progress (e.g. as a result of a power outage or loss of the network connection), it will still remain usable. The update process will then be completed when the device next boots.
Based on standard communication protocols:	There is no need to reconfigure routers and firewalls because HTTP and FTP are used.
Support for extensive environments:	The IGEL Universal Management Suite can be scaled to accommodate several thousand thin clients.
Group and profile-based administration:	The thin clients within a given organizational unit can be administered very easily via profiles. If members of staff move to another department, the administrator can change the settings with a simple drag-and-drop procedure.
Trouble-free rollout:	IGEL thin clients can be automatically assigned to a group on the basis of either the relevant sub-network or a list of MAC addresses provided by IGEL. They then automatically receive the configuration settings for the group.
Comprehensive support for all configuration parameters:	Most IGEL thin client settings, such as device or session configurations, can be changed at the click of a mouse via the UMS user interface.

Transferral of administrative rights:	Large organizations can authorize a number of system administrators for different control and authorization areas. These administrative accounts can be imported from an Active Directory.
Planning tasks:	Maintenance tasks can be scheduled to take place during the night so that day-to-day operations are not disrupted.
VNC shadowing:	Members of the IT support team have remote access to thin client screens, enabling them to rapidly identify problems and demonstrate solutions directly to users.

1.3. IGEL UMS components

The IGEL Universal Management Suite program (referred to below as the UMS) comprises the following three components:

- IGEL UMS *Server* (page 9)
- IGEL UMS *Administrator* (page 10)
- IGEL UMS *Console* (page 10)

1.3.1. UMS Server – the backend

The UMS Server is a server application which requires a relational database management system (RDBMS, referred to below as a **database**; see *Installation requirements* (page 144) for supported databases. The database can either be on the server itself or installed on remote hosts and linked up accordingly.

The IGEL UMS Server communicates internally with the database and externally with the registered thin clients and the "control center", the UMS Console.

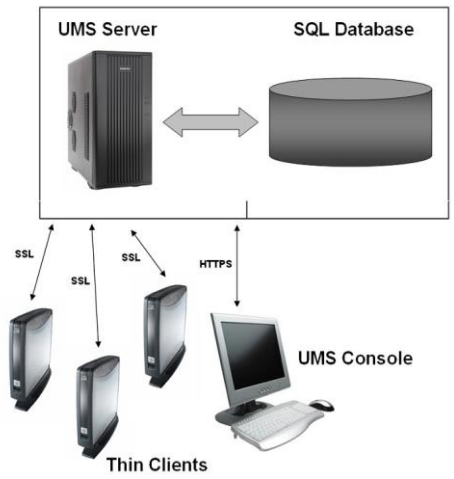


Figure 1: The backend

Data transmission between the server and thin clients/console is encrypted. Typically, the UMS Console is installed not only on the server system but also on other computers in the network.

Each configuration for the managed thin clients is saved in the database. Changes to the configuration are made in the database and are transferred to the thin client if necessary. The thin client can retrieve the information from the database during the booting procedure or you can send the new configuration to the thin client manually. A scheduled configuration update is also possible.

1.3.2. UMS Administrator – the administration program

The UMS Administrator is one of the UMS Server's administrative components and, as such, is only available via the server.

The key parts of the UMS Administrator are as follows:

- Network configuration (ports, WebDAV resources)
- Database configuration (data sources, backups)

Many administrative tasks are also available via the UMS Console.

1.3.3. UMS Console – the central control hub

The UMS Console is the interface to the UMS Server.

The key functions of the UMS Console are as follows:

- Displaying the thin clients' configuration parameters
- Setting up profiles and planned tasks
- Administering firmware updates

The thin clients and their configuration are administered via the GUI of the UMS Console. This is the central control hub for thin client administration. The console can be installed either on the server itself or locally on another computer within the network. Alternatively, it can be launched as a Java Web Start application without being installed.

2. Installation

In this chapter, you can find out what requirements must be met in order to install the UMS successfully. Using an example, we show an installation with a Windows or Linux operating system. You can also find out what you need to bear in mind when performing an update and where you can connect external database systems.

2.1. Installation requirements

In order to install the IGEL Universal Management Suite, your hardware and software must meet the following minimum requirements:

UMS complete installation

- At least 1 GB of RAM (2 GB recommended)
- At least 1 GB of free HDD space (plus database system)
- For details of the supported operating systems, please see the UMS Data Sheet on the IGEL website.

Tip: FAQ for installing the UMS on 64-bit systems

Individual console installation

- At least 512 MB of RAM (1 GB recommended)
- At least 250 MB of free HDD space
- Java Web Start Console: Java 1.8.0_40 or newer required
- For details of the supported operating systems, please see the UMS Data Sheet on the IGEL website.

Warning: The UMS Server must not be installed on a domain controller system. Manually modifying the Java Runtime Environment on the UMS Server is not recommended. Running additional Apache Tomcat web servers together with the UMS Server is not recommended either.

For details of the supported database systems, please see the UMS Data Sheet on the IGEL website. Details of the requirements when installing and operating the database can be found in the documentation for the particular DBMS.

From an IP point of view, the UMS Server and Load Balancer for high availability (*High Availability* (page 141), HA) must be within the same network without NAT or proxies which influence communication between the components.

The internal database (Embedded DB) **cannot** be used for an HA network. You can also use the Embedded Database for a dedicated test installation with only a single server for the UMS Server and Load Balancer. However, you cannot use this to set up a real HA network.

2.2. Installing a UMS Server

This example describes the complete procedure for installing a UMS Server with an internal Embedded DB. If your required installation differs, you can select individual components accordingly, e.g. for an individual console installation.

> You will find instructions for installing the UMS HA (High Availability) Extension in the *Appendix* (page 141).

2.2.1. Installation under Windows

The procedure for installing the IGEL Universal Management Suite under Windows is as follows:

1. First download the current version of the IGEL Universal Management Suite from the IGEL Download Server and launch the installer by running the `EXE` file.

   > You will need administration rights for the computer in order to install the IGEL UMS.

2. Close any other applications and confirm that you have done so.
3. Read and confirm the license agreement.
4. Read the explanation of the installation process.
5. Select a path for the installation.
6. Select the type of installation (see above).
7. Set a user and the password for the database connection.
8. Choose a name for the entry in the Windows Start Menu.
9. Read the summary and start the installation process.
10. Close the program once installation is complete.

    If you have chosen the standard installation, the IGEL Universal Management Suite Server will now run with the Embedded Database.

11. Launch the UMS Console.
12. Connect to the server using the access data you gave during the installation (database user).

    > To use the UMS with external databases, see *Connecting external databases* (page 15).

The Windows installer creates entries in the Windows software directory and the Start Menu. An icon for launching the UMS Console will also be placed on the desktop.

> FAQ *Installation of UMS on 64-bit systems* (*https://faq.igel.com/otrs-igel/public.pl?Action=PublicFAQZoom;ItemID=647*)

2.2.2. Installation under LINUX

The procedure for installing the IGEL Universal Management Suite under Linux is as follows:

1. First download the current version of the IGEL Universal Management Suite from the IGEL Download Server. The installation program under Linux is an X11 application.
2. Log in as `ROOT`.

   > You will need `ROOT` rights for the computer in order to install the IGEL UMS.

3. Open a terminal window such as xterm, Console, Gnome Terminal etc. and switch to the directory of the installation package.
4. Check that the package can be executed. In order for it to be executed, you may need to create it using

   ```
   chmod a+x setup*.bin.
   ```

5. Run the `setup-igel-ums-linux-0.1.bin` installation file. Use `sudo` to run setup with `ROOT` permission.

   The installer will be unpacked to `/tmp`, will run its Java Engine and will remove itself again once the installation is complete.
6. Close any other applications and confirm that you have done so.
7. Read and confirm the license agreement.
8. Read the explanation of the installation process.
9. Select a path for the installation.
10. Select the type of installation (see above).
11. Set a user and the password for the database connection.
12. Read the summary and start the installation process.
13. Close the program once installation is complete.

    If you have chosen the standard installation, the IGEL Universal Management Suite Server will now run with the Embedded Database.
14. Launch the UMS Console in installation folder, e.g. `/opt/IGEL/RemoteManager/RemoteManager.sh`
15. Connect to the server using the access data you gave during the installation.

    > To use the UMS with external databases, see *Connecting external databases* (page 15).

> FAQ *Installation of UMS on 64-bit systems* (*https://faq.igel.com/otrs-igel/public.pl?Action=PublicFAQZoom;ItemID=647*)

2.3. Updating a UMS Installation

Create a backup of the database before updating a previously installed version of the IGEL UMS.

If you still use an older version of the IGEL Remote Manager with SAP DB, we recommend that you switch to the Embedded DB before updating the IGEL UMS. For a more detailed description of the switchover process, please contact IGEL Support.

> **Warning:** Installing a version of the UMS which is older than the one currently used is only possible if you have a backup of the database with the corresponding older schema. This is because the database schema can only be updated to newer versions and changes cannot be undone! To ensure that it is possible to revert to a previous version, you should make backups of your current system before updating the UMS.

It is advisable to set up a test system where you can initially install new versions of the IGEL UMS. This will enable you to check your processes before you start using the new version on your actual system. This also applies to hotfixes, patches etc. for the server system and database.

> If you have a console version which is older than your server version, you will not be able to connect to the server (`Unable to load tree` error message). In this case, be sure to update your installation of the console too.

2.3.1. Updating under WINDOWS

The procedure when updating under Windows is as follows:

1. First download the current version of the IGEL Universal Management Suite from the IGEL Download Server and launch the installer by running the `EXE` file.

   > You will need administration rights for the computer in order to install the IGEL UMS.

2. Close any other applications and confirm that you have done so.
3. Read and confirm the license agreement.
4. Read the explanation of the installation process.
5. Select a path for the installation.
6. Choose a name for the entry in the Windows Start Menu.
7. Read the summary and start the installation process.
8. Confirm that you have closed all other UMS applications.
9. Confirm the automatic updating of the database schema (see warning above).
10. Close the program once installation is complete.

    Once the update has been installed successfully, the UMS Server will once again connect to the previously used database.

11. Launch the UMS Console.
12. Connect to the server using the access data you gave during the installation.

The Windows installer creates entries in the Windows software directory and the Start Menu. An icon for launching the UMS Console will also be placed on the desktop.

2.3.2. Updating under LINUX

The procedure when updating under Linux is as follows:

1. First download the current version of the IGEL Universal Management Suite from the IGEL Download Server. The installation program under Linux is an X11 application.
2. Log in as `ROOT`.

   > You will need `ROOT` rights for the computer in order to install the IGEL UMS.

3. Open a terminal window such as xterm, Console, Gnome Terminal etc. and switch to the directory of the installation package.
4. Check that the package can be executed. In order for it to be executed, you may need to create it using

   ```
   chmod a+x setup*.bin.
   ```

5. Run the `setup-igel-ums-linux-[version].bin` installation file.
6. The installer will be unpacked to `/tmp`, will run its Java Engine and will remove itself again once the installation is complete.
7. Close any other applications and confirm that you have done so.
8. Read and confirm the license agreement.
9. Read the explanation of the installation process.
10. Select a path for the installation.
11. Read the summary and start the installation process.
12. Confirm that you have closed all other UMS applications.
13. Confirm the automatic updating of the database schema (see warning above).
14. Close the program once installation is complete.

    Once the update has been installed successfully, the UMS Server will once again connect to the previously used database.
15. Launch the UMS Console in installation folder, e.g.
    `/opt/IGEL/RemoteManager/RemoteManager.sh`
16. Connect to the server using the access data you gave during the installation.

2.4. Connecting to External Database Systems

You will find details of the supported database systems and the HA Extension in the IGEL UMS Data Sheet and on the IGEL website respectively. Details of the requirements when installing and operating the database can be found in the administration manual for the particular DBMS.

➢ To configure the database, use the relevant DBMS management program.

The configuration for setting up the data source and connecting the UMS to the database should be carried out in the UMS Administrator.

> All UMS Servers must work with the same database.

2.4.1. Oracle

To integrate Oracle, proceed as follows:

1. Set up a new database user with `Resource` authorization.
2. Set up a new Oracle type data source in the UMS Administrator.

> A number of Oracle versions set up the `Resource` role without `CREATE VIEW` authorization. Please ensure that this authorization is set for the role.

2.4.2. Microsoft SQL Server

To connect the Microsoft SQL Server, proceed as follows:

1. Open the SQL Console of the SQL Server by selecting **New Query**.
2. Use the following script as a template, change it as necessary and then execute it.

   > To avoid problems when enabling the data source, ensure that `LOGIN`, `USER` and `SCHEMA` are the same.

   ```
   CREATE DATABASE rmdb
   GO
   USE rmdb
   GO
   CREATE LOGIN igelums with PASSWORD = 'setyourpasswordhere',
   DEFAULT_DATABASE=rmdb
   GO
   CREATE USER igelums with DEFAULT_SCHEMA = igelums
   GO
   CREATE SCHEMA igelums AUTHORIZATION igelums GRANT CONTROL to igelums
   GO
   ```

3. Set up a new `SQL Server` type data source in the UMS Administrator.
4. Ensure that the **server port** of the SQL Server is configured correctly in the data source. The default value is `1433`.

   The Microsoft SQL Server should allow **Windows and SQL authentication**.

2.4.3. PostgreSQL

IGEL UMS uses PostgreSQL functions (from Version 8.2). Older versions are not supported.

When installing a new instance of the PostgreSQL database, set the following parameters:

1. Install the database cluster with `UTF-8` **coding.**
2. Accept the conditions for all **addresses**, not just `localhost`.
3. Activate **Procedural Language** `PL/pgsql` in the default database.

   For further information regarding installation of the PostgreSQL database, see http://www.postgresql.org.

Once installation is complete, carry out the following configuration procedure:

1. Change the server parameters: The parameter `listen_addresses` in the file `postgresql.conf` must contain the host name of the IGEL UMS Server **OR** `'*'` in order to allow connections to each host.
2. Set up a `host` parameter in the file `pg_hba.conf` in order to give the UMS Server the authorization to log in using the user data defined there.

   > If the IGEL UMS Server is installed on the same machine as the PostgreSQL Server, no changes to these files are needed.

3. Launch the administration tool pgAdmin.
4. Create a new login role with the name `rmlogin`.
5. Create a new database with

   name = `rmdb`
   owner = `rmlogin`
   encoding = `UTF-8`

6. Set up a new schema within the rmdb database with

   name = `rmlogin`

7. Check whether the language plpgsql is available in the rmdb database.

   If not, set it up.

8. In the **UMS Administrator**, create a new `PostgreSQL`-type data source with the host name of the PostgreSQL Server and the correct server port (default is `5432`), user `rmlogin` and database `rmdb`.

2.4.4. Apache Derby

As with other external databases, we recommend that you create a new database instance for use by the IGEL UMS.

Perform the following steps to create a new database instance and define the instance as a data source in the **UMS Administrator**:

1. For security purposes, enable **User Authentication** in the Derby DB.
2. Launch the ij Utility (in `[derby-installation-dir]/bin`).
3. To create the rmdb instance, execute the following command:

   ```
   connect
   'jdbc:derby:rmdb;user=dbm;password=dbmpw;create=true';
   ```

4. Define the UMS database user `rmlogin` with passwordi `rmpassword`

   ```
   CALL SYSCS_UTIL.SYSCS_SET_DATABASE_PROPERTY('derby.user.rmlogin',
   'rmpassword');
   ```

5. Exit ij and launch the Derby Network Server.
6. In the **UMS Administrator**, create a new `Derby`-type data source with the host name of the Derby Server and the correct server port (default is `1527`), user `rmlogin` and database `rmdb`.

   For further information regarding installation of the Derby database, see http://db.apache.org/derby.

3. First steps

In order to be able to work with the IGEL UMS, you will first need to install the UMS Server, Console and Database before registering at least one thin client or loading the UMS Demonstration Database Backup. This is available on the IGEL Download Server.

The procedure for connecting to the server and registering thin clients using the UMS Console is described below. You will find detailed information regarding the IGEL UMS functions in the chapter *Working with IGEL UMS* (page 26).

3.1. Connecting the UMS Console to the server

To establish a connection to the UMS Server, proceed as follows:

1. Launch the UMS Console.
2. Click on **System→Connect to...** in order to connect to the UMS Server.
3. Enter the server and user data in the login window:

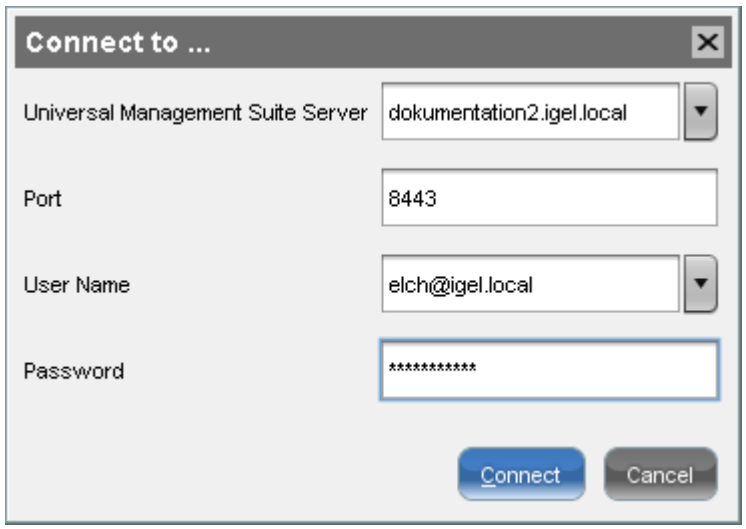


Figure 2: Log on to the UMS Console

UMS Server: Use the host name `localhost` if you are logging on to the server's UMS Console.

Use the host name of the server if you are connecting from a remote UMS Console.

Port: The port on which the IGEL UMS GUI server receives connections is set to `8443` by default. However, it can be changed with the help of the IGEL UMS Administrator program.

User name and **Password**: Enter the user name and password of a UMS administrator. When setting up the IGEL UMS for the first time, these are the access data for the database user account which was created while the UMS Server was being installed. Log on using the user name `<User>@<Domain>` if you belong to a domain configured in the UMS.

➢ Click on **Connect**.

The data entered here, e.g. server name, port and user name, are saved for subsequent connection processes. The next time you establish a connection, you will only need to enter the password. The server and user information last used are also stored in drop-down lists and can therefore be reused quickly. You can delete this list of stored login data in **Misc→Settings→General→Clear Login History**.

3.2. Registering thin clients on the UMS Server

Thin clients can be registered in the UMS Database in various ways:

- *Searching for thin clients within the network* (page 19)
- *Importing thin clients via csv files* (page 22)
- *Registering manually on the thin client* (page 25)
- *Registering thin clients automatically* (page 25)
- *Setting up thin clients manually* (page 26)

If you would like to upload a *server certificate of your own* (page 116), please do this before registering thin clients on the UMS. Otherwise, you will need to remove the old certificates from the thin clients manually after changing the certificate.

3.2.1. Searching for thin clients in the network

To search for thin clients in the network and select them for registration, proceed as follows:

1. Log in to the UMS Console.

   The content panel of the console will be displayed.

2. Click on **Thin Clients→Scan Thin Clients** to access the window allowing you to search for thin clients in the network.

Alternatively, you can start a search by clicking on the button in the tool bar.

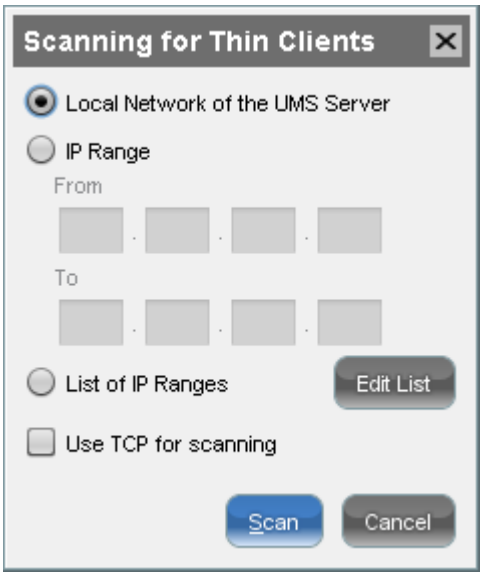


Figure 3: Scan for thin clients

1. You can search the entire network for thin clients that are switched on or restrict your search to specific IP address ranges.
2. Select the thin clients to be registered by checking the **Include** checkboxes.
3. Click **OK**.

3.2.2. Scan for Thin Clients

A thin client must be switched on and functioning if it is to be scanned. Furthermore, the thin client's firmware must support the IGEL UMS software. This is the case for all IGEL thin clients with original firmware as well as for devices from other manufacturers on which the IGEL Linux system was installed using the IGEL Universal Desktop Converter 2.

The following scan options are available:

Local network of the UMS server	With this option, a broadcast message is sent by the network containing the IGEL UMS server. The IGEL UMS server may be in a different network segment from the one that contains the IGEL UMS Console. If the server is installed on the IGEL UMS server and has various network interfaces, only the first interface will be used to send the broadcast message.
IP range	When a message is sent, each IP in the specified range will be contacted, even if routers suppress broadcast messages.
List of IP ranges	If a number of network segments need to be scanned, you can create a list of the IP ranges. To do this, click on **Edit List** and **Add** to add ranges.
Use TCP for searching	Select this option if you would like to use TCP instead of UDP for scanning. In certain networks, scanning with TCP is more reliable, although it does take longer.

Once the scanning procedure is complete, the thin clients that have been detected will be displayed in a sortable list in the scan results window.

In the **Certificate Stored** column, you can see whether a thin client already has a certificate from a UMS Server. Thin client certificates can now be registered on the Server.

In the **Filter** field, you can enter a search string, e.g. parts of the device name, IP address or MAC address, which will be searched for in all visible fields.

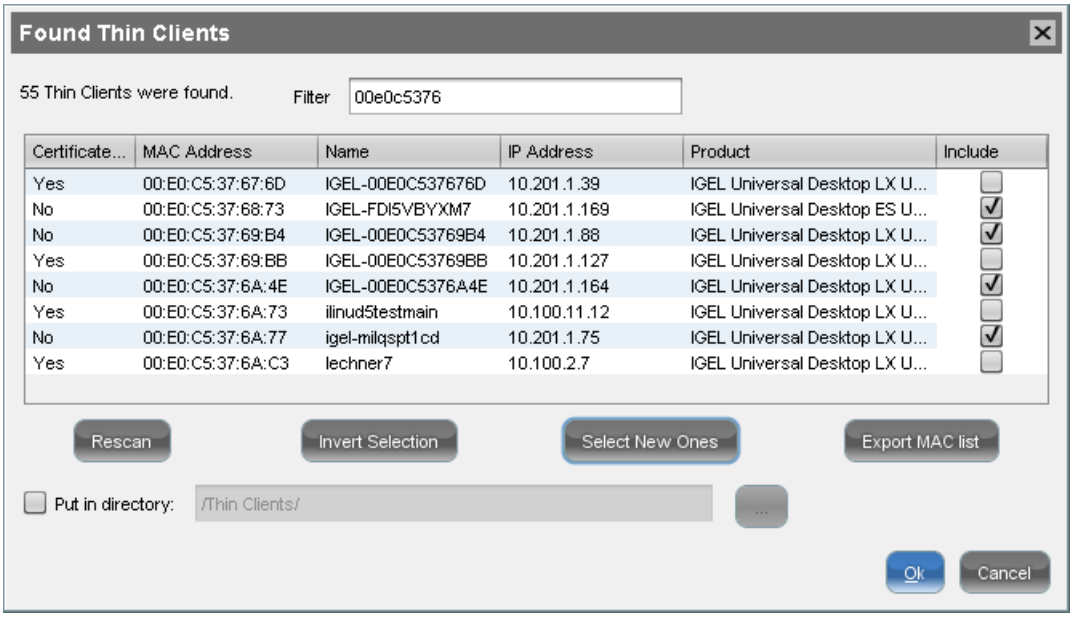

Found Thin Clients
55 Thin Clients were found.
Filter
00e0c5376
Certificate...
MAC Address
Name
IP Address
Product
Include
Yes 00:E0:C5:37:67:6D IGEL-00E0C537676D 10.201.1.39 IGEL Universal Desktop LX U...
No 00:E0:C5:37:68:73 IGEL-FDI5VBYXM7 10.201.1.169 IGEL Universal Desktop ES U...
No 00:E0:C5:37:69:B4 IGEL-00E0C53769B4 10.201.1.88 IGEL Universal Desktop LX U...
Yes 00:E0:C5:37:69:BB IGEL-00E0C53769BB 10.201.1.127 IGEL Universal Desktop LX U...
No 00:E0:C5:37:6A:4E IGEL-00E0C5376A4E 10.201.1.164 IGEL Universal Desktop LX U...
Yes 00:E0:C5:37:6A:73 ilinud5testmain 10.100.11.12 IGEL Universal Desktop LX U...
No 00:E0:C5:37:6A:77 igel-milqspt1cd 10.201.1.75 IGEL Universal Desktop LX U...
Yes 00:E0:C5:37:6A:C3 lechner7 10.100.2.7 IGEL Universal Desktop LX U...
Rescan
Invert Selection
Select New Ones
Export MAC list
Put in directory:
/Thin Clients/
Ok
Cancel

Figure 4: Results of the scan process

3.2.3. Registering thin clients

To register new thin clients, proceed as follows:

1. In the **Include** column, highlight the thin clients that you would like to register in your IGEL UMS Database.
2. Click **Select New Devices** to select all thin clients without a certificate.
3. Confirm your selection by clicking on **OK**.

   The thin clients will now be registered in your database. This may take some time depending on the performance of the IGEL UMS Server.
   If a thin client is registered in the IGEL UMS Database, the server certificate will be saved on the thin client. Further access to the thin client will now be validated on the basis of this certificate. Only the owner of the other private part of the certificate can manage the thin client.
4. Store the thin clients in a selected **directory** within the navigation tree immediately after registering them. This will save you having to sort them manually.

   The result of the procedure and any error messages will be displayed in a new window.
5. Close this window in order to return to the main screen.

3.2.4. Importing thin clients

You can already register thin clients before they are actually installed within the network. In order to do this, you will need a `csv` file with the information on the thin clients needed for registration. This is at least the MAC address, the thin client name and the firmware ID.

The firmware for the thin clients must be available in the database for the import. To ensure that this is the case, it can be imported along with the firmware or provided by thin clients that have already been registered. This method is therefore not always appropriate when setting up the IGEL UMS for the first time.

1. Launch the import under **System→Import→Import Thin Clients**.

   If invalid data, e.g. an unknown item of firmware or an error, are found during the import procedure, a corresponding message will appear in the lower part of the dialog field in the message window. The row with the relevant thin client will be highlighted in red.
2. Click on **Clear** to delete all messages from the window.
3. Click on **Import TCs** to launch the import procedure.

   Thin clients that have been imported successfully will be highlighted in green.

The **Import** dialog window also contains a number of simple editing functions for making last-minute changes, e.g. correcting the firmware ID:

- Ctrl-C and Ctrl-V for copying and pasting a highlighted row
- Del/Ctrl-X for deleting a highlighted row
- Return/Enter inserts an additional row under a field

Import with short format

The short format provides the information required for the import and assignment to a profile: **MAC address, device name, firmware ID, profile ID**.

> The ID of a firmware version already registered can be found via **Misc→Firmware Statistics**.
>
> The ID of a profile is shown in the **description data** and in the **tool tip** for the profile.

Example:

```
00E0C5540B8B;IGEL-00E0C5540B8B;1;26
00E0C5540B8C;IGEL-00E0C5540B8C;1;26
00E0C5540B8D;IGEL-00E0C5540B8D;1;26
```

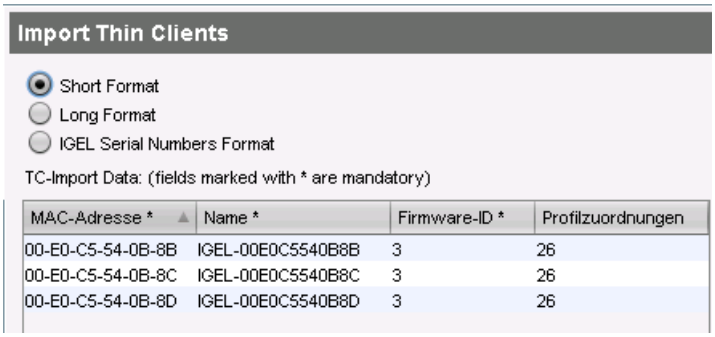


Figure 5: Import with short format

Import with long format

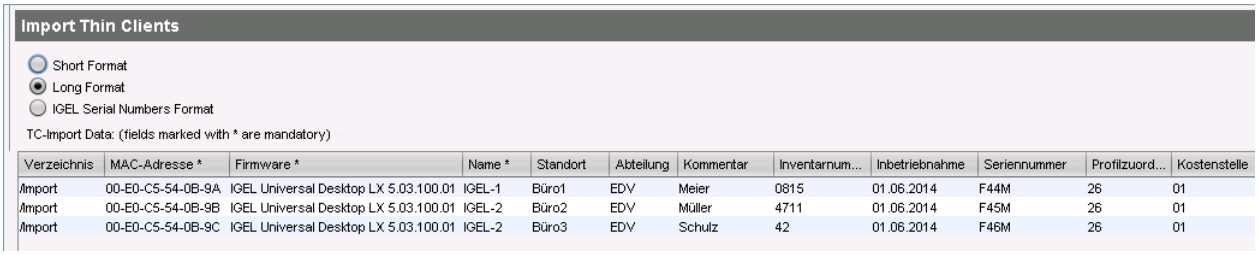
Unlike the short format, the long format also allows further data, e.g. the storage directory in the UMS navigation tree, serial number, site etc. to be imported. You will see what information can be imported after selecting the long format in the import dialog.

Example:

```
/Import;00E0C5540B9A;IGEL Universal Desktop LX;5.03.100.01;IGEL-1;Büro1;EDV;Meier;0815;01.06.2014;F44M;26;01

/Import;00E0C5540B9B;IGEL Universal Desktop LX;5.03.100.01;IGEL-2;Büro2;EDV;Müller;4711;01.06.2014;F45M;26;01

/Import;00E0C5540B9C;IGEL Universal Desktop LX;5.03.100.01;IGEL-2;Büro3;EDV;Schulz;42;01.06.2014;F46M;26;01
```



Verzeichnis	MAC-Adresse *	Firmware *	Name *	Standort	Abteilung	Kommentar	Inventarnum...	Inbetriebnahme	Seriennummer	Profilzuord...	Kostenstelle
/import	00-E0-C5-54-0B-9A	IGEL Universal Desktop LX 5.03.100.01	IGEL-1	Büro1	EDV	Meier	0815	01.06.2014	F44M	26	01
/import	00-E0-C5-54-0B-9B	IGEL Universal Desktop LX 5.03.100.01	IGEL-2	Büro2	EDV	Müller	4711	01.06.2014	F45M	26	01
/import	00-E0-C5-54-0B-9C	IGEL Universal Desktop LX 5.03.100.01	IGEL-2	Büro3	EDV	Schulz	42	01.06.2014	F46M	26	01

Figure 6: Import with long format

The **Firmware** column in the preview is made up of two values from the import file (system and firmware version).

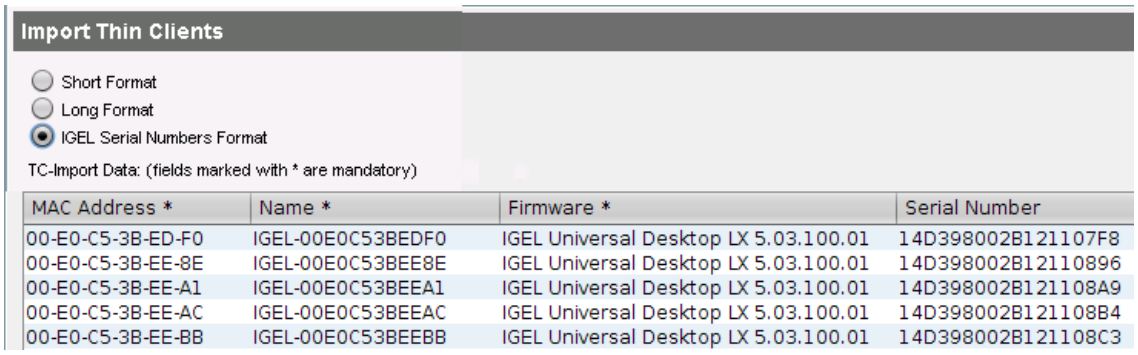
The ID of a profile is shown in the **description data** and in the **tool tip** for the profile.

Import with IGEL serial number

The **serial number format** allows thin clients to be imported using a file produced in connection with the order. You can request this import file when ordering your IGEL thin clients. By doing so, the devices can be integrated into the UMS and configured before they are even delivered.

Example:

```
08154711;14D3B8C01B14110EBE;00E0C56133E4
47110815;14D3B8C01B14110EC6;00E0C56133EC
42007ABC;14D3B8C01B14110ED7;00E0C56133FD
007ABC42;14D3B8C01B14110EF9;00E0C561341F
```



MAC Address *	Name *	Firmware *	Serial Number
00-E0-C5-3B-ED-F0	IGEL-00E0C53BEDF0	IGEL Universal Desktop LX 5.03.100.01	14D398002B121107F8
00-E0-C5-3B-EE-8E	IGEL-00E0C53BEE8E	IGEL Universal Desktop LX 5.03.100.01	14D398002B12110896
00-E0-C5-3B-EE-A1	IGEL-00E0C53BEEA1	IGEL Universal Desktop LX 5.03.100.01	14D398002B121108A9
00-E0-C5-3B-EE-AC	IGEL-00E0C53BEEAC	IGEL Universal Desktop LX 5.03.100.01	14D398002B121108B4
00-E0-C5-3B-EE-BB	IGEL-00E0C53BEEBB	IGEL Universal Desktop LX 5.03.100.01	14D398002B121108C3

Figure 7: Import with serial number format

The device firmware is not imported from the file. The firmware with the highest ID is allocated by default. The IDs for firmware versions already registered can be found via **Misc→Firmware Statistics**.

In the import file, the serial number constitutes the first part of each row. In the preview, it is listed as the last column.

3.2.5. Registering thin clients manually

You can also register a thin client on the UMS Server on the client itself:

1. Enter the name and the address of your UMS Server and the server port (standard setting `30001`) under **System→Remote Management** in the thin client setup.
2. Carry out the registration procedure, entering the login data for the UMS Server.
3. Reboot the thin client.

On thin clients with the UDLX firmware, you will find a dedicated program for registering on the UMS Server under **System** in the **Application Launcher**. As a result, you can determine from the client itself the sub-directory in the navigation tree to which the client will be added.

There are two ways to pass on the IP address of the UMS Server to the thin client:

- If you register a thin client on the UMS Server, the IP address of the server will be saved on the thin client. The registry key is: `system.remotemanager.server0.ip`.

  The thin client connects to this IP address in order to retrieve its settings each time it boots. Alternatively, you can configure your DHCP server in such a way that it provides the IP address via Option 224.
- The second way is to create an alias with the name `igelrmserver` for the UMS Server in your DNS.

If you would like to add thin clients to your UMS Database manually, you must use one of these options. Otherwise, the thin client will not be able to connect to the server.

3.2.6. Registering thin clients automatically

The IGEL UMS Server can be configured in such a way that all thin clients without a certificate which boot in the server's network are automatically registered.

1. To do this, enable the **Automatic Registration** parameter under **Settings→Further Settings** in the **IGEL UMS Administrator** program.
2. You can register an IGEL thin client on the UMS Server automatically by setting the DNS entry `igelrmserver` (Record Type A) or a DHCP option (224).
3. Set the DHCP option 224 as a string - not as DWORD - to the IP address of the server by adding the following to the `dhcpd.conf` file in the appropriate section, e.g. in the global area:

   ```
   option igelrmserver code 224 = text
   option igelrmserver "<IP of the UMS Server>"
   ```
4. You should also set the DNS entry `igelrmserver` to the IP address of the UMS Server.

Warning: If this option is enabled, each thin client without a certificate in the network will be added to the UMS Database. If you reset a client to the factory settings and reboot it, it will immediately be registered on the server again. We recommend automatic registration if new clients are to be registered during a network rollout. Once the clients have been registered, disable the automatic registration option on the UMS Server.

3.2.7. Setting up thin clients manually

To create an entry for a thin client in the database manually, proceed as follows:

1. Select **New Thin Client** either in the context menu of a thin client directory or in the menu under **System→New**.
2. Give the MAC address, the name and the firmware of the thin client and, optionally, select a directory for the client.

The firmware for the thin clients must be available in the database for the manual set-up. To ensure that this is the case, it can be imported along with the firmware or provided by thin clients that have already been registered. This method is therefore not always appropriate when setting up the IGEL UMS for the first time.

4. Working with the IGEL UMS

The IGEL Universal Management Suite provides extensive tools for managing your thin client infrastructure. The majority of administrative tasks can be found in the UMS Console, while the UMS Administrator provides a number of tools for server configuration.

The program's graphical user interface and the tools available are described in detail below.

4.1. The console window

The UMS Console contains various tools and information areas.

Key elements include:

- The navigation tree
- The (context) menu
- The content panel

The UMS Console window is made up of the following parts:

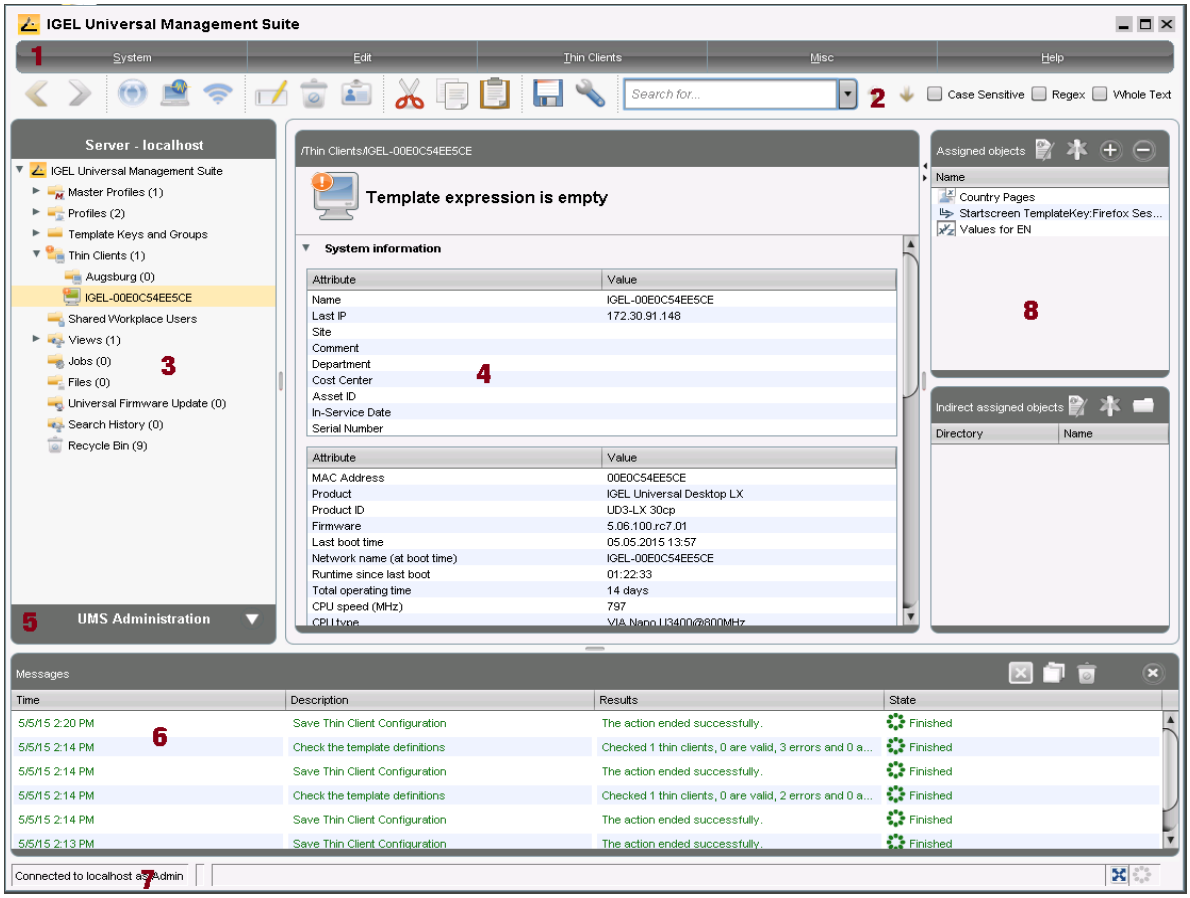


Figure 8: The UMS console window

1	*The menu bar* (page 28)	All commands and actions can be executed from the menu. You can use shortcuts (Alt + underlined character in the menu item) to access the menu bar via the keyboard.
2	*Symbol bar* (page 30)	Frequently used commands relating to objects in the navigation tree.
3	*The navigation tree* (page 31)	Provides access to all UMS objects such as thin clients registered on the UMS Server, directories, profiles, views and planned tasks.
4	*The content panel* (page 33)	Information regarding the selected object (most entry fields can be edited directly).
5	*UMS administration* (page 33)	Allows you to manage tasks, e.g. configuring domains, Universal Firmware Updates and the scheduled backup of the UMS Database (Embedded DB only).
6	*Messages* (page 34)	Displays actions launched in the UMS Console. Green text indicates successful procedures. Red rows highlight a problem while the command was being executed.
7	*Status row* (page 34)	Status messages from the console, e.g. the server currently connected and the user name.
8	*Context menu* (page 35)	Objects such as profiles and files which are assigned to the thin clients or folders (directly or indirectly).

4.1.1. Menu bar

At the top edge of the console window you will find the context-dependent **menu bar**.

It consists of five menus – **System**, **Edit**, **Thin Clients**, **Misc** and **Help**.

System

Menu → System

Connec to ... Disconnect	Allows you to establish and terminate the UMS Server connection
Refresh	Allows you to refresh the view
New	Allows you to create new UMS objects such as directories, profiles, tasks etc.
Import/Export	Allows you to import and export objects such as firmware, profiles, thin clients
Administrator Accounts	Allows you to set up and manage UMS user accounts and groups
Snapshot Management	Allows you to manage structures on the UMS Web Server
Logging	Displays message/event logs and exports the logs
License Management	Allows you to create and assign firmware licenses to thin clients
VNC Viewer	Allows you to shadow a thin client
Open Customization Builder *	Allows you to launch the Universal Customization Builder, see *UCB in the appendix* (page 149).
Exit	Allows you to exit the UMS Console application

* if licensed

Edit

Menu → Edit

Save Description	Allows you to save changes to the data in the content panel
Edit Configuration	Configuration parameters for a thin client or profile
Rename, Delete	Object-related actions within the tree
Access Control	Allows you to manage user and group rights for the selected object
Cut, Copy, Paste	Object-related actions within the tree

Thin clients

Menu → Thin Clients

Thin client commands (Suspend, Shutdown ...)	Commands that can be issued to thin clients, e.g. shut down, restart, firmware update, send/receive settings, send message etc.
Take over Settings from ...	Allows you to send profile settings to the thin client on a one-off basis
Clear Configuration Change Status flag	Allows you to reset change markings (blue dot next to the icons for the thin clients)
Check the template definitions *	Allows you to check the assignment of template values
Scan for Thin Clients	Allows you to search for thin clients in the network of the UMS Server

* if feature enabled

Extras

Menu → Misc

Default Directories	Automatic assignment of thin clients to directories according to specific rules.
Search	Allows you to search for objects.
Scheduled Jobs	Allows you to manage public holiday lists and assign tasks to hosts.
Change Password	Allows the password of a logged-in user to be changed.
SQL Console	Direct access to the database with SQL scripts
Firmware Statistics	A list of firmware versions registered in the database
Remove Unused Firmware	Allows you to delete from the database firmware versions which are not used by any thin client or profile.
Cache Management	Allows you to view, update and empty the UMS Server cache.
Settings	Configuration parameters such as console language, timeout values for online checks or Universal Firmware Update search etc.

Warning: The SQL Console is intended solely for administrative purposes. You can destroy the database through SQL operations on the Console.

Help

Menu → Help

Help	Link to the manual on edocs.igel.com
IGEL Knowledge Base	Link to further online documentation on edocs.igel.com
Save Support Information...	Allows you to save UMS Server and Console log files in a `ZIP` file
Save TC Files for Support	Allows you to save log and configuration files for a thin client in a `ZIP` file.
Licenses from Third-Party Providers	List of the licenses for third-party software and libraries used in the UMS, e.g. Apache Tomcat
Info	Shows details of the current version of the UMS Console and Java environment as well as the logged-in user

4.1.2. Tool bar

In the **tool bar**, you will find buttons for frequently used commands:

Figure 9: The symbol bar

The symbols are as follows (in the correct order):

Update	Allows you to update the view and status of the thin clients.
Online Check	Allows you to perform an online check of the thin clients.
Scan Thin Clients	Allows you to search for thin clients within the network.
Rename	Allows you to change the name of objects in the navigation tree.
Delete	Allows you to delete objects in the navigation tree.
Authorizations	Allows you to specify access rights for selected objects.
Cut, Copy, Paste	You can also move objects within the tree via drag and drop.
Save Description Data	Allows you to save edited description data for thin clients or profiles (data in the content panel).
Edit configuration	Allows you to maintain the configuration parameters for thin clients or profiles. These normally correspond to the parameters in the clients' local setup.
Step Backwards / Forwards	Allows you to move backwards and forwards in the console history.

The **step backwards/forwards** merely allows you to review the objects last visited. It does not allow you to undo changes you have made!

4.1.3. Navigation tree (management tree)

The **navigation tree (management tree)** is subdivided into the following areas:

Master Profiles	Allows you to create and organize master profiles
Profiles	Allows you to create and organize standard profiles
Template Keys and Groups	Keys and values for use in template profiles
Thin Clients	Allows you to organize the managed thin clients in this area
Shared Workplace Users	Assigns specific profiles to AD users
Views	Allows you to create configurable list views for thin clients
Jobs	Allows you to define scheduled tasks, e.g. firmware updates
Files	Allows you to register files for transferral to thin clients
Universal Firmware Updates	Allows you to download the current firmware versions for distribution to thin clients
Search History	Saved search queries
Recycle Bin	Contains deleted objects as well as objects which can be restored

You can use sliders to change the size of individual areas and hide them. You can highlight and select objects in the navigation tree by clicking on them. You can select multiple objects using the Shift or the Ctrl key.

Under **Thin Clients**, you will find all of the thin clients registered in the database.

> Tip: The number of items contained (including items in sub-folders) is shown after each folder. You can change the display settings in the menu under **Misc > Settings > Show Number of Directory Items**.

➢ Select a directory.

The TC directory content page is shown in the content panel – with information on the contents of the directory and assigned objects (e.g. profiles).

Each thin client that is identified by its MAC address can only be shown once in the UMS tree. You can move a thin client by dragging and dropping it from one directory to another. The name shown in the tree is only used to identify the thin client in the UMS and does not need to be identical to the name of the thin client in the network – although this internal name is set to the network name when you register the thin client for the first time. The TC name does not need to be unique and can be used a number of times. The MAC address is the unique identifier here.

The color of the thin clients in the UMS tree indicates their respective status:

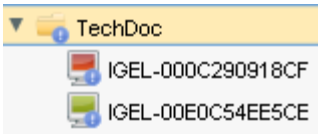


Figure 10: Colors in the UMS tree

- Green if the thin client is online
- Red if the thin client is offline
- Exclamation mark if changes have not yet been applied

Recognition occurs automatically by regularly sending UDP packets to the thin clients that are currently displayed in the UMS Console (default: every 3 seconds). You can update this status manually in the symbol bar and specify the query interval for the online check in the **Misc→Settings→Online Check** menu.

The online check can be disabled completely in the *UMS Administrator* (page 37) application.

In the **Profiles** sub-structure, you can manage profiles for thin clients or thin client directories. You have the option of creating directories for saving profiles and can add, delete and change the profiles in this part of the structure. Information on a selected profile is shown in the content panel. To assign a profile to a thin client, you can drag and drop the thin client into the profile or vice versa. This also works with profiles and thin client directories. Profiles can also be assigned to the thin clients or thin client directories via the **Add** button in the object areas (8).

All generated thin client views are shown under **Views**. You can generate new views, edit or delete views and export the result of the view in various formats (e.g. XML). This tree structure can also contain sub-directories for arranging views.

If you use the **IGEL Shared Workplace** function in order to distribute user-specific profiles to thin clients when logging on, you should assign one or more profiles to an AD user or a group in the **Shared Workplace Users** area. You can also generate a simulated view of the settings taking effect here.

All specified jobs are shown under **Jobs**. You can create new planned jobs and edit or delete listed jobs. Jobs are assigned to thin clients in the detailed view for a job. This tree structure can also contain sub-directories for organizing jobs.

4.1.4. The content panel

The **contents area** or content panel shows the properties of the particular object highlighted in the tree. This can be the contents of a directory, e.g. the profiles, thin clients, sub-folders, tasks etc. contained therein, or detailed information relating to an object such as a thin client's system information, the basic data for a profile, the hit list for a view etc.

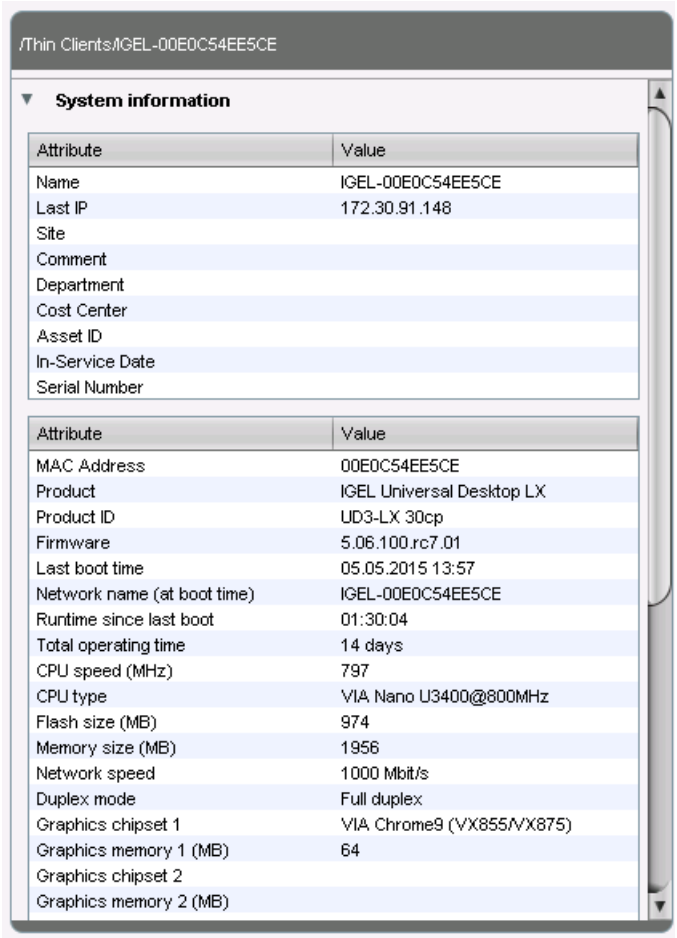


Figure 11: System information of the thin client

4.1.5. UMS Administration

With Version 3.09 of the IGEL Universal Management Suite, a number of UMS Administrator settings options have been moved to the administration area of the UMS Console. The console now features a new **UMS Administration** area.

Configuration of the Active Directory and the server settings for Universal Firmware Updates have been moved from the UMS Administrator to the administration area of the UMS Console. In the UMS Administrator, a corresponding note is shown on the previously used tabs. You will also find new functions such as the alternative LDAP configuration or scheduled backups.

4.1.6. Messages

The **Messages** window area contains information regarding the successful or unsuccessful execution of commands. If a command could not be executed successfully, a message written in red appears in the list. A warning symbol will also flash in the status bar of the UMS Console until the user selects the message.

- Click **Show Result** or double-click the message in order to view the relevant details.
- You can delete messages you have already dealt with or wait until the message window is automatically reset when you close the UMS Console.
- You can change the size of the message window using the middle slider or hide it altogether.

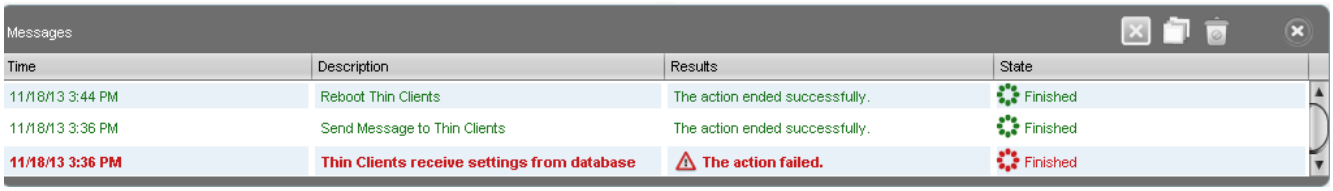


Figure 12: The Messages window

4.1.7. Status bar

The **status bar** shows the name of the UMS Server currently connected and the user who is logged in to the console. The symbol at the bottom right indicates the status of the message window. For example, it signals when new warning messages are present. These can be seen here even if the message area is hidden.

4.1.8. Assigned objects

To ensure that you can quickly tell directly and indirectly assigned objects apart, the **assigned objects** area is subdivided into two parts.

Directly assigned objects have been assigned to an individual thin client, folder or profile,

whereas indirect objects have been "inherited" via the file structure.

➢ Double-click an object in the assignment area in order to directly edit the profile assigned to a thin client.

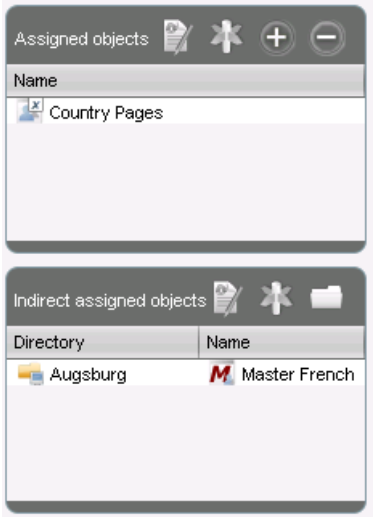


Figure 13: Directly and indirectly assigned objects

4.1.9. Context menu

You will be given an object-dependent **context menu** by right-clicking on the corresponding object. Depending on your selection, actions for folders, thin clients, Shared Workplace users etc. will be available. The chosen command will be carried out for all objects previously marked in the tree.

Certain commands can only be executed for individual objects, not for directories with objects. These options are then disabled in the menu. Example: The command **File TC > UMS** can only be executed for an individual thin client. In contrast, the command **File UMS > TC** can be executed for all thin clients in a directory.

4.1.10. Search for objects in the UMS

Objects within the UMS navigation tree can be found using the following functions:

- Quick Search
- Search function
- View

Quick Search in the symbol bar provides the quickest access to the search function. The entry mask is always visible in the console window. The key combination Shift-Ctrl-F places the cursor in the entry field. The **Quick Search** search queries are restricted to a small number of object properties: object name, object ID, MAC address, IP address. These data are buffered locally when the console is launched and can therefore be searched very quickly without having to access the database. The user's last 20 search queries are saved to allow quick access. They are saved in the console user's system user data (Windows Registry) rather than in the UMS database.

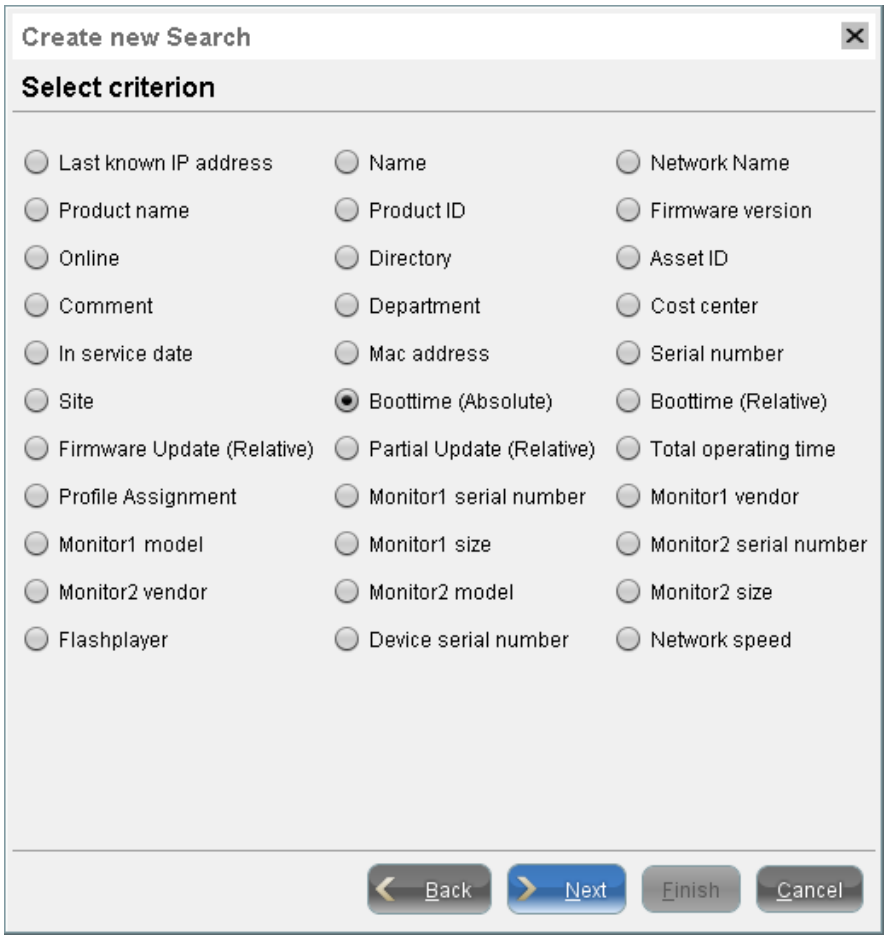


Figure 14: Search Parameters for Thin Clients

The normal UMS search function (**Misc→Search** or Ctrl-F key combination) provides additional options for searching the UMS database. In addition to the Quick Search data (see above), all other thin client, profile or view data can be selected here, e.g. an individual inventory number or the monitor model connected. Various criteria can be logically linked (AND / OR). The user's search queries are recorded under **Search History** in the navigation tree and can therefore be processed or reused easily.

Views (page 94) function very similarly to search queries. Here too, various criteria can be linked and the query saved. Unlike with search queries, however, **views** are available to all UMS administrators together – depending on their authorizations. **Views** can also be taken into account when defining *planned tasks* (page 100).

4.1.11. Deleting objects in the UMS / recycle bin

With the IGEL Universal Management Suite from Version 4.07.100 onwards, you can also move objects to the **recycle bin** instead of permanently deleting them straight away. The recycle bin is enabled or disabled globally for all UMS users.

➢ Enable the recycle bin in the administration area under **Additional Settings→Enable Recycle Bin**.

If an object in the structure tree is deleted (**Delete** function in the symbol bar, in the context menu or the Del key), it will be moved to the recycle bin following confirmation.

> If the recycle bin is active, objects can also be deleted directly and permanently by pressing Shift-Del.

Directories are moved to the recycle bin along with their sub-folders and all items and can therefore be restored again as a complete structure. You will find the UMS recycle bin as the lowest node in the UMS console structure tree. Items in the recycle bin can be permanently deleted there or restored. To do this, bring up the context menu for an item in the recycle bin.

> If you cannot bring up the context menu for items in the recycle bin, the recycle bin is probably inactive. Check the status of the recycle bin as described above.

Virtually all items from the UMS structure tree can be moved to the recycle bin: thin clients, profiles, views, tasks, files and their directories. Shared Workplace users cannot be deleted, while administrator accounts (in account management) and search history items can only be deleted permanently (with Shift-Del). The highest nodes in the structure tree cannot be deleted either. However, this procedure will affect all deletable items beneath this node!

- Objects in the recycle bin cannot be found via the search function or views and cannot be addressed by planned tasks.
- Thin clients in the recycle bin will not receive any new settings from the UMS but will remain registered in the UMS and can be restored again along with all assigned profiles from the recycle bin.
- The fact that profiles in the recycle bin are no longer effective means that the settings for thin clients may change. Profiles previously assigned to thin clients will be reactivated if they are restored again.
- Planned tasks, views and search queries in the recycle bin will not be executed.
- At the same time, assigned profiles, files, views and firmware updates in the recycle bin are not active.

4.2. The IGEL UMS Administrator

The IGEL UMS Administrator application is only available on one UMS Server as this makes it possible to intervene directly in communications between the services. It allows basic data such as the ports used or data sources connected to be edited. These functions are not available in the administration area of the console.

The Administrator's server configuration can be exported and imported again for backups via **File**. You can change the language of the Administrator tool under **File→Settings→Language**.

> The authorizations for changing settings depend on whether a person is authorized to change IGEL UMS files on the server system. When using the IGEL UMS Administrator, you should therefore use the same user account as you did when you installed the UMS.

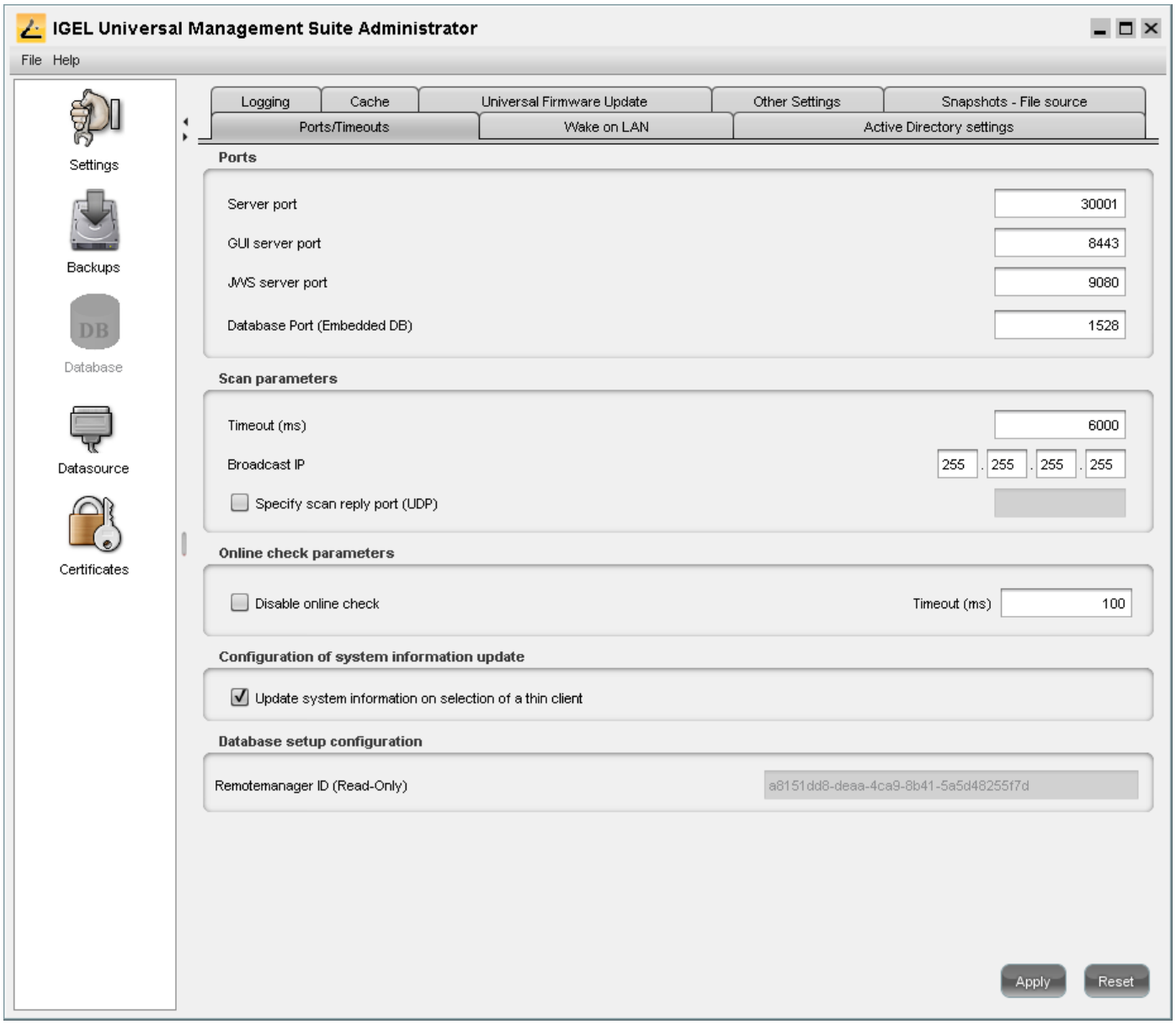


Figure 15: UMS Administrator

4.2.1. Server settings

Using the UMS Administrator, you can change various server settings.

Ports/time limits

When the application is launched, the **Settings** window of the UMS Administrator will be displayed. Here, you can specify the ports to be used by the UMS and other related settings such as the time limit etc.

The IGEL UMS server uses these open ports for incoming queries:

Port name	used by	Task
Server port	TC server	The thin clients connect to this port. The default port is 30001. It can be changed here.
GUI server port	IGEL UMS Console	Establishes the connection to the server. You must enter this port in the logon window of the IGEL UMS Console, the default number is 8443.
HTTP port	Java Web Start interface	If you would like to use Java Web Start, you must specify this port in the connection URL, e.g. http://hostname:9080/start_rm.html. The default port for the UMS TC web server is 9080.
DB port		Communication with the **Embedded DB** takes place via port 1528, for external databases you can set the port under **Data Sources**.

➢ Activate **Allow SSL Connections only** in order to encrypt network traffic to and from IGEL UMS. If you do, Java Web Start will only work with the GUI Server port (default 8443).

Do not activate **Allow SSL Connections only** if you have thin clients with Windows Embedded 7 before version 3.08.100 running and want to use Universal Firmware Update. Those older Windows firmwares do not support updates via HTTPS.

In the **Scan Parameters** area, the following values can be configured:

Time out	This parameter specifies how long the IGEL UMS will wait for a response to scan packets that were sent to the network. The value is given in milliseconds and is set to 6000 by default.
Broadcast IP	Broadcast address that is used for scan packets. It is only used for scanning the local network. If IP ranges are used, the UDP packets will be sent to each client within the IP range. The default setting here is 255.255.255.255. Under normal circumstances, this does not need to be changed.
Specify scan reply port (UDP)	Allows you to specify a set port via which the thin clients respond if you use UDP for scanning. If TCP is used, this port is not needed because the response is given via a configured socket. If you leave the default setting and do not specify a port, the application will select any free port.

In the **Online Status Check Parameters** area, **Time Out** specifies how long the system will wait for a response to an online status query message. The IGEL UMS Console attempts to contact all thin clients that are currently visible in the console. Each thin client in this area must respond to the status query in the specified time or will otherwise be flagged as offline. The default value is 100 ms.

To disable the online status check, proceed as follows:

➢ Select **Disable Online Status Check**.

You can also disable the online check on the UMS Console. The difference in this case is that the function is only disabled for this one console installation.

Other settings

Various other general parameters can be configured here:

Thin Client Requests	You can restrict the maximum number of simultaneous requests (such as `get_settings_on_boot`) accepted if for example there are problems with a large number of clients booting at once. In this case, however, it would be better to use a UMS High Availability network in order to distribute client queries across a number of UMS Servers.
Scheduled Jobs	Allows you to define the maximum time allowed for scheduled jobs.
Agjust names of Thin Clients	In the UMS Console, you can give thin clients a device name. The thin clients have a name within the network – by default, this is `IGEL-<MAC address>`. You can now synchronize both of these: • Select **Adjust UMS-Internal Name** to use the network name of the TC in the UMS. • Select **Adjust Network Name** to use the name in the UMS as the device name too.
Automatic Registration	Allows you to automatically register IGEL thin clients which boot within the network.

Snapshotd - File sources

Allows you to create **Web Resources** in the **WebDAV** folder which you can use with the UMS-internal web server Tomcat.

With the help of these resources, you can make files available to your thin clients, e.g.

- Firmware updates
- Partial updates
- Background images
- Virus scanner signatures etc.

To create a new web resource, proceed as follows:

1. Click on **New**.
2. Define a name for the resource under **Public Name** .
3. Select the **Document base path** to which the resource should point.
4. Click on **OK**.

To test access to the new web resource, proceed as follows:

1. Open a browser.
2. Enter the address of the web resource: `http://<UMS Server>:9080/<public name>`
3. Log in to the resource using a UMS administrator account.

4.2.2. Backups

The internal Embedded DB of the UMS Server can be backed up directly via the UMS Administrator. Backups created previously can also be loaded up again. For external database systems, please use the backup and recovery procedures recommended by the DBMS manufacturer. In this case, certificates must be backed up separately.

Creating a Backup

To create a backup, proceed as follows:

1. Click on **Change** next to the **Directory** entry field to change the destination directory.

   The file selection window will appear.
2. Specify the storage location for your backups.
3. Click on **Create**.
4. Enter a name for this backup in the pop-up window.

   The data will be saved in the directory you have selected.
   The certificate files `server.pem` and `server.crt` will also be included in the backup.

Restoring a Backup

> Your current database will be overwritten. It is strongly recommended that you create a backup of the current data before another backup is restored.

To restore a saved backup, proceed as follows:

1. Select the desired backup from the backup list.
2. Click on **Restore**.
3. Once your data have been restored, the login data for the database will be displayed.

Deleting a Backup

To delete a saved backup, proceed as follows:

1. Select the desired backup from the backup list.
2. Click **Delete** to remove backups that you no longer need.

   > Both the entry in the UMS Administrator and the backup file on the hard disk will be deleted!

Backup on the Command Line

A command line program for creating a backup with batch file scripts is also available. The program is called `embackup.exe` and it can be found in the **rmadmin** directory in the UMS installation directory.

You can launch the program with the following options:

`b path/filename:`	the path and the name of the backup file that is created
`r path/filename:`	the backup file with the specified path will be restored in the database
`u username:`	UMS user name
`p password:`	Password of the UMS user

Tipp & Trick

See *Planned backup (Embedded DB)* (page 118)

4.2.3. Data Sources

The connection to a database system is provided via data sources which you can manage in the UMS Administrator. If you have chosen the standard installation, the Embedded DB is already set up as the data source and enabled.

See also: *Connecting external database systems* (page 15)

Setting up a Data Source

1. Click on **Add** to add a first data source or an additional one.

   A dialog window will open.

2. Select the DBMS type, the host / port for establishing the connection and the user set up on the DBMS.

   More detailed information regarding the supported DBMS can be found in the UMS Data Sheet on the IGEL website and in the *UMS HA appendix* (page 141).

   > Provided that a data source has not been enabled, these settings can still be changed by selecting **Edit**. The active data source is protected against changes to its configuration. By selecting **Change Password**, you can set a new password for the database user. This is also possible when a data source is active.

3. Click on **Test** to test the connection to the database.

   This is also possible when a data source is inactive.

Activating a data source

You can set up a number of data sources. However, only one can be actively used by the server.

To activate this data source, proceed as follows:

1. Select a data source from the list of sources that have been set up.
2. Click **Activate**.
3. Enter the password for the data source that you have selected.

   While the data source is being activated, the application checks whether a valid database schema can be found. If no schema is found, a new schema will be created. An out-of-date schema will be updated, and, if the schema contains unfamiliar data, these will be overwritten.

4. Confirm each of these actions.

> **Warning**: Overwriting existing data means that the entire database schema will be deleted and not just the out-of-date tables used by the IGEL UMS.

Copying a data source

To switch from the standard installation with an Embedded DB to an external database system, e.g. an Oracle RAC cluster, proceed as follows:

1. Prepare the new database in accordance with the installation instructions for the UMS.
2. Set up a suitable new data source for this DBMS.
3. Select the Embedded DB data source which is still active.
4. Click **Copy**.
5. Select the destination data source.
6. Start the process after entering the destination login data.
7. Activate the new data source.

Optimizing the active Embedded DB

➢ Click **Optimize Database** to optimize an active Embedded Database.

The contents of the database will be restructured.
The database index will be renewed in order to speed up database operations.
A message window will appear once the procedure has been successfully completed.

4.2.4. Certificates

Via the **Certificates** window area, you can not only save and restore certificates but also convert them, e.g. from the Remote Manager 2.x format into the current format in each case.

You can also import an exported KeyStore file when reinstalling the IGEL UMS.

5. Thin Clients

The **Thin Clients** node is a key part of the navigation tree. Here, you can organize and manage all devices registered on the UMS Server. This includes IGEL thin clients and external devices installed with UDC.

5.1. Managing thin clients

In the IGEL UMS, you can sort thin clients according to directories via a structure tree. You can use this facility to provide devices forming groups on the basis of their location or structure with the same profiles or to sort the thin clients in keeping with your company structure.

5.1.1. Creating a directory

You can create as many directories and sub-directories as you want in order to group the thin clients together. When you create sub-directories, the thin clients organized in it form sub-groups of a group.

> A thin client that is unequivocally identified by its MAC address can only be stored in a single directory, i.e. only as a member of a single group.

To create a directory or sub-directory, proceed as follows:

1. Select a directory, e.g. **Thin Clients**.
2. Click **System→New →New Directory** in the main menu bar

   or select the option **New Directory** from the context menu of the selected directory.
3. Enter a name for the new directory.
4. Click **OK**.

   The new directory will be displayed directly below the selected directory in the structure tree.

You can now move thin clients to this new directory.

5.1.2. Importing a directory

If you are planning a complex directory structure, you do not need to set it up in a step-by-step manner in the UMS Console. Instead, you can create a `csv` file (e.g. with a spreadsheet program) in which you determine the directory structure and then import the structure from this list.

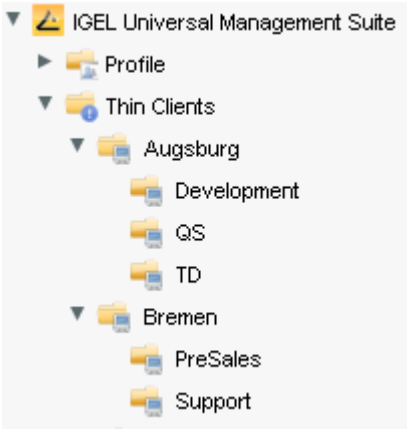


Figure 16: UMS tree structure

The tree structure shown above is based on the following file:

```
Thin Clients; Augsburg; TS
Thin Clients; Augsburg; QA
Thin Clients; Augsburg; Development
Thin Clients; Bremen; Support
Thin Clients; Bremen; PreSales
```

To import a directory structure from a `csv` file, proceed as follows:

1. Select **System→Import→Import Directories** from the main menu.

   The **Import Directories** window will appear.

2. Click **Open File** in order to load a `csv` file.

   > In the first column, you must specify one of the default master directories. In this way, you can also import directory structures for profiles, tasks, views or files.

3. Click **Import Directories** in order to create the directory structure.

A window showing the result of the import will appear. Any newly created directories will be underlined.

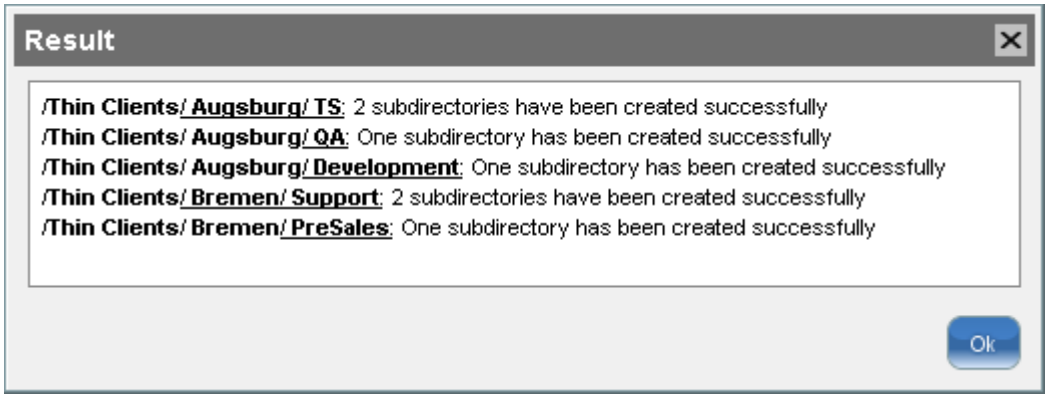

Result
/Thin Clients/ Augsburg/ TS: 2 subdirectories have been created successfully
/Thin Clients/ Augsburg/ QA: One subdirectory has been created successfully
/Thin Clients/ Augsburg/ Development: One subdirectory has been created successfully
/Thin Clients/ Bremen/ Support: 2 subdirectories have been created successfully
/Thin Clients/ Bremen/ PreSales: One subdirectory has been created successfully
Ok

Figure 17: Result of import

5.1.3. Deleting a directory

To delete a directory, proceed as follows:

1. Select the directory that is to be deleted.

   Be sure to delete the directory in the structure tree rather than in the content panel of the console window, otherwise the entire directory path will be deleted at the same time.

2. Click **Delete** in the context menu of the directory

   or click **Delete** in the tool bar
   or press the Del button.
   A list of all objects that are to be deleted will appear.

   If a directory is deleted, all sub-directories and objects such as thin clients, profiles or views contained in it will be deleted too.

3. Confirm that you wish to delete the relevant objects by clicking on **OK**.

5.1.4. Moving thin clients

Drag and drop is the easiest way of moving thin clients from one directory to another:

1. Press and hold down the Ctrl key if you would like to select a number of thin clients.
2. Use the Shift key to select a row of thin clients.
3. Confirm that you wish to move the relevant objects by clicking on **Yes**.

   The **Time Changed** window will appear.

If profiles are indirectly assigned to a thin client or revoked as a result of the thin client being moved to a different directory, its configuration too will change. The new configuration can take effect either immediately or when the thin client is next rebooted.

4. Select when you want the changes to take effect and confirm this by clicking on **OK**.

You can disable these confirmation dialogs in the relevant window. You can then undo this change again under **Misc→Settings→General.**

5.1.5. Defining rules for stipulated directories

You can define rules for default directories. During the registration process, the thin clients will automatically be allocated to specific directories in the tree on the basis of these rules. They are given the settings of the profiles for these directories. As a result, all you need to do is register the thin clients in order to ensure that they are automatically assigned previously created profiles.

To define rules for default directories, proceed as follows:

1. Select **Misc→Default Directories**.

   The list of pre-defined rules will be shown in the pop-up dialog.
2. Click **Add**, **Edit** and **Remove** to add a new rule or edit or delete an existing one.
3. Click the up and down buttons to change the order of the rules.

The order of the rules is important because the first rule satisfied by a thin client determines the directory in which the thin client will be stored.

Creating/editing a directory rule

1. Click **Add** under **Misc→Default Directories** to create a new rule.

   Click **Edit** under **Misc→Default Directories** to change an existing rule.
2. Select the directory where the thin clients are to be stored if they satisfy the rule.
3. Enable the option **Overwrites Existing Directory Allocation** in order to re-register in the destination directory a previously registered thin client.
4. Enable the option **Apply Rule When the TC is Booted** in order to move a previously registered thin client to the associated directory in accordance with the directory rule each time its reboots. In this case, there is no need to re-register it

Establishing conditions

With the help of the assistant dialog, you can establish in three steps the conditions which must be met in order to use the rule.

1. Select a search parameter or a selection criterion.

   The available criteria are:

- IP address
- Name of the thin client
- Network name
- Product name
- Product ID
- Firmware version
- Network mask

2. Specify the reference value for the criterion.

   The possible entry ranges will vary depending on the chosen criterion. Further information on the various entry areas can be found under **Search**.

3. Click **Continue** to proceed.

   You will be given an overview of the defined default directory.

4. Enable the option **Further Narrow Down Search** or **Set Further Selection Criterion** in order to define the rule more precisely.

   The assistant will once again open the **Select Search Parameter** window.

5. Repeat steps 1 to 3.

6. Click **Finished**.

   The new rule will be set up and will be shown in the list.

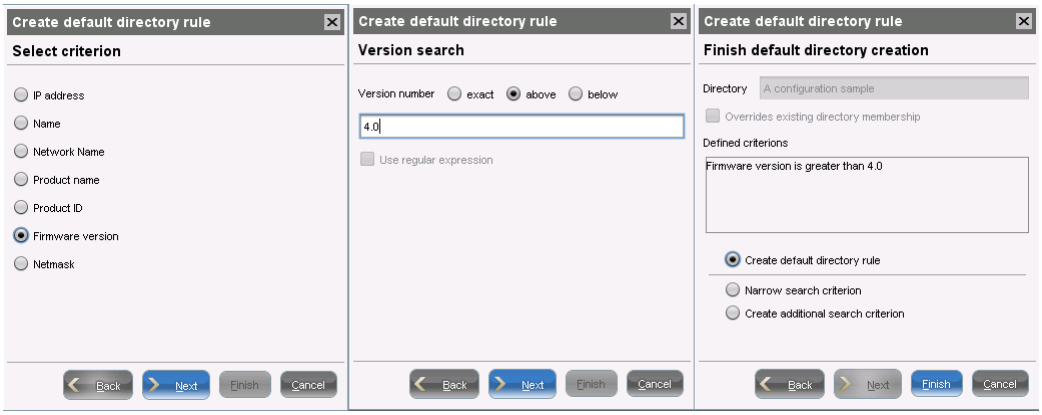


Figure 18: Create default directory rules

Using a directory rule

The rules can be used regardless of new clients being imported or existing clients booting:

➢ Click **Use** in the directory rule overview.

You can also define how thin clients which do not satisfy any of the rules are to be handled. You can leave them in the current directory or collect them in a specific other folder.

Examples

First example:

Assigning a thin client to a directory on the basis of device data

A thin client satisfies this rule if it is a UD3 device with a firmware version higher than 4.0 and the IP address comes from the 10.201.0.x range.

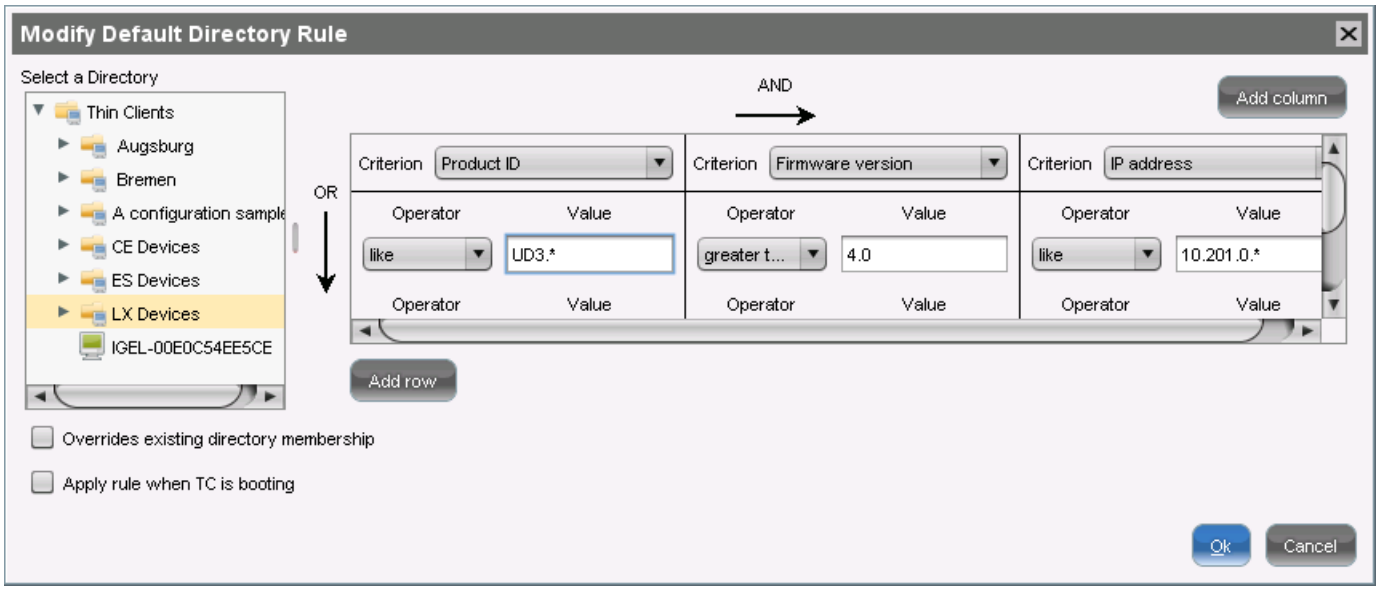


Figure 19: Change default directory rule

Second example:

Assigning a thin client to a directory on the basis of network masks

If a thin client is registered in the IGEL UMS, it is moved to a folder which is determined on the basis of the **Network Mask** criterion. If the relevant folder does not exist, it will be created. Because this rule always applies, it is not a good idea to define a further rule. Only the first rule will be effective. If the network mask rule sorts all thin clients into directories, no further rule is active. The relevant folder is determined through this operation:

```
Folder = IP address AND network mask
```

IP address	Network mask	Resulting directory
130.094.122.195	255.255.255.224	130.094.122.192
172.16.232.15	255.255.0.0	172.16.0.0
192.168.1.1	255.255.255.0	192.168.1.0

Special case – structure tag

The **structure tag** is a special selection criterion for directory rules. A flag of this type can be allocated locally on the thin client or assigned to each thin client via DHCP. If a thin client is registered and returns such a structure tag, it can be stored in the designated directory on the basis of a directory rule. Unlike with "normal" directory rules, the rule with structure tags covers several directories at a time – this makes this solution more flexible and straightforward and provides optimum support when rolling out thin clients automatically.

A Best Practice document regarding the use of the structure tags can be found *here* (*http://edocs.igel.com/index.htm#10202089.htm*).

Requirements:

The following requirements must be met if a thin client is to supply the information regarding storage in a specific directory.

- IGEL UMS 4.08.100 or newer
- Client with IGEL Linux 5.05.100 or newer
- Structure tag is assigned to the client manually or via DHCP

Assigning a structure tag to the thin client:

- Automatically via DHCP: Use Option 226 of your DHCP server in order to supply the thin clients in the network with the desired structure tags. The client then passes on the tag to the UMS Server upon registration.
- Manually on the thin client: You can also allocate the structure tag during manual registration from the thin client. See *IGEL Linux remote administration* (*http://edocs.igel.com/index.htm#2694_1.htm*).

5.2. Configuring thin clients

You can configure a thin client

- locally on the device itself
- via the configuration dialog of the UMS
- via a profile for the UMS

  or

- via VNC access.

You can edit the thin client configuration locally in the client setup or directly for this client in the IGEL UMS:

➢ Double-click the thin client in the navigation tree

  or select **Edit Configuration** from the menu / context menu
  or select the corresponding symbol from the tool bar.

The thin client setup dialog in the UMS and the profile configuration procedure are structured in the same way as the local setup application. Details of this are set out in the relevant system manual.

To determine when changes to the configuration are to take effect, proceed as follows.

1. Change the configuration.
2. Click **Save**.
3. Select when the settings are to take effect.

   - **Next reboot**: The thin client will automatically retrieve its settings each time it boots.
   - **Immediately**: The settings will be transferred to the thin client immediately.

   If the thin client is not switched on, this operation cannot be performed and the thin client will be given its settings the next time it reboots. In both cases, the settings will initially be saved in the database.

If you have selected **Immediately**, a pop-up dialog will ask the user whether the new settings should take effect immediately. You can change the user message using the following two registry parameters: `userinterface.rmagent.enable_usermessage` and `userinterface.rmagent.message_timeout`.

5.3. Shadowing (VNC)

The IGEL UMS Console allows you to observe the desktop of a thin client on your local PC via shadowing with VNC. In order to enable shadowing, you must allow remote access in the security options for the thin client.

5.3.1. Launching a VNC session

To launch a VNC session, proceed as follows:

1. In the context menu, click **Shadowing.**

   A connection dialog will appear.

2. Enter the password if you have set one in the security options.

If you have a user account, you can connect to the UMS Server and launch the IGEL VNC Viewer separately. The IGEL applications folder in the Windows Start Menu contains a link to it.

1. Enter a **host name** or the **IP address** manually on the first tab.
2. On the second tab, select a **thin client** from the structure tree.

5.3.2. IGEL VNC Viewer

If you have launched a VNC session, the shadowed desktop will be shown in the IGEL VNC Viewer window. This window has its own menu with the following items:

File	**Overview**	Shows an overview of all VNC sessions currently connected. Double-clicke of the displayed desktops for a full-screen view of it.
	Terminate	Terminates all VNC sessions and closes the window.
Tab	**New**	Opens the connection dialog so that you can launch another VNC session.
	Adjust	With this option, you can adjust the size of the window in which the desktop currently selected is displayed.
	Send Ctrl-Alt-Del	Sends the key combination Ctrl+Alt+Del to the remote host currently displayed.
	Refresh	Refreshes the window content.
	Screenshot	Saves a screenshot of the window contents on the local hard drive.
	Options	Opens a dialog window in which you can specify further options such as coding, color depth, update interval etc.
	Close	Closes the currently selected tab.
Help / Info		Shows the software version of the IGEL VNC Viewer.

You can specify the following parameters as options:

Preferred Coding	The coding used when sending image data from the thin client to your PC. The coding option **Tight** is particularly useful in a network with a low bandwidth. It contains two additional parameters: • **Compression level**: The higher the compression, the longer the computing operation takes! • **JPEG quality**: If you select **Off**, no JPEG data will be sent.
Use Draw Rectangle Method	This option improves performance. However, artifacts may be encountered.
Color Depth	8 or 24 bits per pixel
Update Period	Time period between two updates. A longer time period reduces network traffic, but the update may not be seamless. Please note: An update query will be sent as soon as you move the mouse or enter a key in the VNC Viewer. This event will be passed on to the remote host.
Save Properties as Standard Values	Saves the current settings as standard values for future VNC sessions.

You can specify an external VNC viewer program from another provider in the UMS Console:

➢ Click **Misc→Settings→General**.

To pass on the IP address of the thin client to an external application, add the parameter `<hostname>`. Example:

External VNC viewer: `C:\Program Files\TightVNC\vncviewer.exe <hostname>`

5.3.3. External VNC viewer

You can specify an external VNC viewer program from another provider in the UMS Console:

➢ Click on **Misc→Settings→General**.

To pass on the IP address of the thin client to an external application, add the parameters `<host name>` and `<port>` in **External VNC Viewer**.

Examples:

- TightVNC: `"C:\Program Files\TightVNC\tvnviewer.exe" <host name>:<port>`
- UltraVNC: `"C:\Program Files\uvnc\UltraVNC\vncviewer.exe" -connect <host name>::<port>`
- RealVNC: `"C:\Program Files\RealVNC\VNC Viewer\vncviewer.exe" <host name>:<port>`
- TigerVNC: `"C:\Program Files\TigerVNC\vncviewer.exe" <host name>:<port>`

> Place the program path in double quotation marks as shown above to ensure that the call works even if there are spaces in the path.

5.3.4. Secure shadowing (VNC with SSL)

The **Secure Shadowing** function improves security when remote maintaining a thin client via VNC at a number of locations:

- Encryption: The connection between the shadowing computer and the shadowed thin client is encrypted.

  This is independent of the VNC viewer used.

- Integrity: Only thin clients in the UMS database can be shadowed.
- Authorization: Only authorized persons (UMS administrators with adequate authorizations) can shadow thin clients.

  Direct shadowing without logging on to the UMS is not possible.

- Limiting: Only the VNC viewer program configured in the UMS (internal or external VNC viewer) can be used for shadowing.

  Direct shadowing of a thin client by another thin client is likewise not permitted.

- Logging: Connections established via secure shadowing are recorded in the UMS server log.

  In addition to the connection data, the associated user data (shadowing UMS administrator, optional) can be recorded in the log too.

Of course, this is only relevant to thin clients which meet the requirements for secure shadowing and have enabled the corresponding option. Other thin clients can be "freely" shadowed in the familiar manner and, if necessary, secured by requesting a password. If you would like to allow secure shadowing only, you can specify this in *Misc Settings* (page 124) in the UMS Administration area.

Basic principles and requirements

The **Secure Shadowing** option can be enabled subject to the following requirements being met:

- IGEL Universal Desktop Linux or IGEL Universal Desktop OS 2, each from Version 5.03.190 or IGEL Universal Desktop Windows Embedded Standard 7 from Version 3.09.100
- IGEL Universal Management Suite from Version 4.07.100 onwards
- Thin client is registered on the UMS server
- Thin client can communicate with UMS console and UMS server (see below)

Basic technical principles:

Unlike with "normal" shadowing, the connection between the VNC viewer and the VNC server (on the thin client) is not established directly during secure shadowing. Instead, it runs via two proxies – one for the UMS console and one for the VNC server on the thin client. These proxies communicate via an SSL-encrypted channel, while the local communication, e.g. between the VNC viewer application and the UMS proxy, takes place in the conventional unencrypted manner. As a result, a secure connection can also be established with external VNC programs that do not support SSL connections.

The two proxies (UMS console and thin client) communicate with SSL encryption via the same port as the "normal" VNC connection: 5900. As a result, no special rules for firewalls need to be configured in order to perform secure shadowing.

If secure shadowing is active for a thin client (**Setup→System→Shadowing→Secure Shadowing**), the thin client generates a certificate in accordance with the X.509 standard and transfers it to the UMS Server when the system is next started. The UMS server checks subsequent requests for a secure VNC connection

using the certificate. The certificate in PEM format can be found in the `/wfs/ca-certs/tc_ca.crt` directory on the thin client. The validity of the certificate can be checked on the (Linux) thin client using the command: `x11vnc -sslCertInfo /wfs/ca-certs/tc_ca.crt`

```
VNC Certificate file:
        /wfs/ca-certs/tc_ca.crt

Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number: 1572055243 (0x5db3a8cb)
    Signature Algorithm: md5WithRSAEncryption
        Issuer: C=DE, L=Bremen, O=IGEL
        Validity
            Not Before: Jun  6 06:04:50 2014 GMT
            Not After : Jun  6 06:04:50 2037 GMT
        Subject: C=DE, L=Bremen, O=IGEL
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
                Public-Key: (1024 bit)
                Modulus:
                    00:a4:e4:67:f3:cf:23:90:06:c3:d6
                    5e:0e:00:b8:43:14:6d:61:c5:65:ca
```

Figure 20: Thin client certificate for secure shadowing

If a UMS administrator calls up the **Shadowing** function in the UMS Console for the thin client, the console receives a signed request from the UMS Server which is then passed on to the thin client to be shadowed. This in turn passes on the request to the UMS server which checks the validity of the request using the original certificate. If this check is successful, the console reports that the channel for the connection between the proxies can be established. The UMS proxy on the console connects to the server proxy on the thin client, and the server proxy in turn establishes on the thin client the connection to its VNC server.

Only when these connections have been established does the console call up the VNC viewer which then connects to the console proxy. The VNC client and VNC server are now connected via the two proxies which transfer data with SSL encryption.

Secure shadowing can be enforced independently of the thin client configuration for all thin clients that support this function: **UMS Administration > Misc Settings > Activate Global Secure VNC**.

Shadow thin clients securely

In order to shadow a thin client securely (with encryption), the administrator must log on to the server via the UMS console. When doing so, it is irrelevant whether a purely local UMS administrator account is used or the user was adopted via an Active Directory for example. As always, however, the UMS administrator must have the right to shadow the object, *see* (page 132).

The thin client to be shadowed is called up in the navigation tree and, as usual, can be executed via **Shadow** in the context menu. The connection window however differs from the dialog for normal VNC shadowing. The IP and port of the thin client to be shadowed cannot be changed, and a password for the connection is not requested – this is superfluous after logging on to the console beforehand.

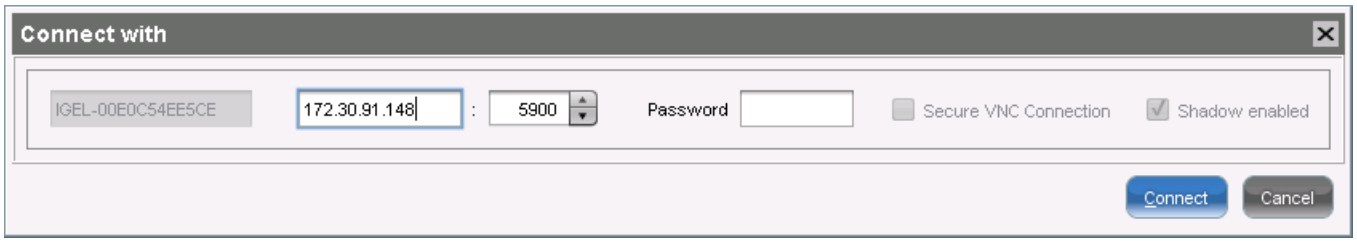


Figure 21: Secure shadowing connection dialog

When a VNC connection has been established, the symbol in the connection tab indicates secure shadowing:

Figure 22: Secure VNC connection

VNC logging

Connections via secure shadowing are always logged in the UMS. Via **UMS Administration→Misc Settings→Secure VNC**, you can configure whether the user name of the person shadowing is to be recorded in the log (the default is inactive).

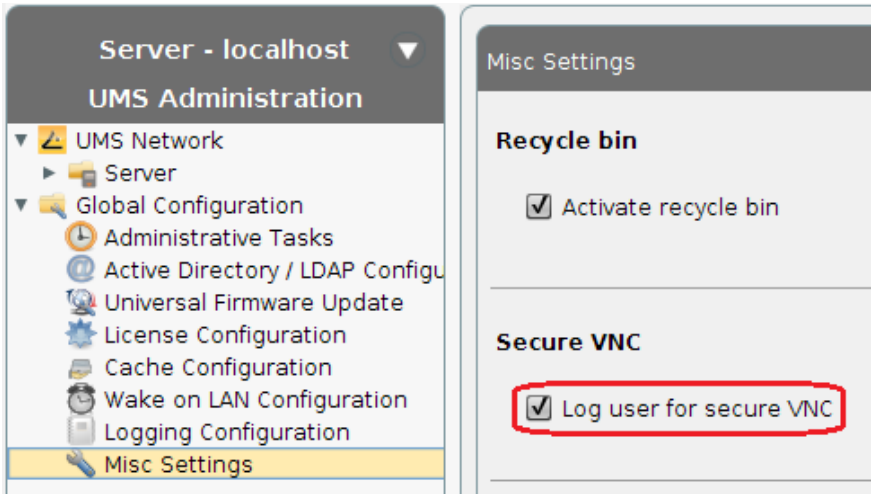


Figure 23: Options for VNC logging

The VNC log can be called up via the **context menu** of a thin client or folder (for several thin clients, **Logging→Secure VNC Logs**). The name, MAC address and IP address of the shadowed thin client, the time and duration of the procedure and, if configured accordingly, the user name of the shadowing UMS administrator are logged.

Secure VNC Logs

Filter: 00E0C56133A9

Thin Client Name	MAC Address	Thin Client IP	User	VNC Starttime	Duration in sec
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:01:17 PM	98
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:06:10 PM	32
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:06:26 PM	19
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:07:09 PM	44
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:07:18 PM	39
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:08:06 PM	48
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:08:38 PM	20
IGEL-00E0C56133A9	00:E0:C5:61:33:A9	10.201.1.123	igel	Jul 9, 2014 1:09:24 PM	26

Figure 24: Log entries for secure VNC connections

➢ To sort the list (e.g. according to user names), click on the relevant column header or filter the content shown by making entries in the **Filter** field.

5.4. Firmware licenses

IGEL thin clients from the Universal Desktop product range (e.g. UD5) are supplied with an installed license. This license enables you to use various firmware functions and is linked to the MAC address of the thin client. Manually created thin clients or hardware from other manufacturers "converted" using the UDC may not have a license. The license must therefore be added to the firmware later on. Upgrade licenses too can be rolled out later on using the UMS license management system.

5.4.1. License management

Under **System→Manage Licenses**, you can export to a `CSV` file the MAC addresses for all thin clients, all unlicensed thin clients or the thin clients selected from a view. This file can then be sent to IGEL Technology GmbH in order to request a license file for these devices.

Once received, the license file can be added to the license management system using the **Add (+)** button. The license will be distributed to the previously selected thin clients during the next booting procedure.

> The thin client must be able to contact the UMS Server with its full qualified domain name, e.g. `mytcserver.mydomain.tld`.

5.4.2. UDC2 test licenses

If you are testing the IGEL Universal Desktop Converter 2 (UDC2), please use the normal licensing mechanism. UDC2 test licenses are already linked to your hardware, which is represented by its MAC address.

5.4.3. Distributing UDC2 licenses

The IGEL Universal Desktop Converter 2 includes a USB token with the IGEL Universal Desktop OS as well as a SIM card with the licenses you will need to run this firmware on an intended system.

Install the IGEL Universal Desktop OS 2 on the intended system (see IGEL UDC2 installation manual) and license the software

- by creating a license during installation, or
- by distributing licenses to previously installed systems using the UMS license management feature.

Important: The IGEL Universal Desktop OS 2 must be installed on the intended devices and the devices must be registered on the UMS Server.

To create a UDC2 license, proceed as follows:

1. Insert the SIM card with the licenses into the USB token's card slot.
2. Insert the USB token into the PC on which the UMS Console is installed.

   > This only applies to the Windows version.

3. If necessary, install the driver for the smartcard reader. You will find a driver on the USB token.

4. Launch the UMS Console application and navigate to **System→Manage Licenses**.

   The new window shows license information.

5. Click **Display Licenses from the Smartcard** and confirm that you wish to begin the procedure.

   The number and type of available licenses will be shown.

6. Select the unlicensed devices for which a license is to be created.

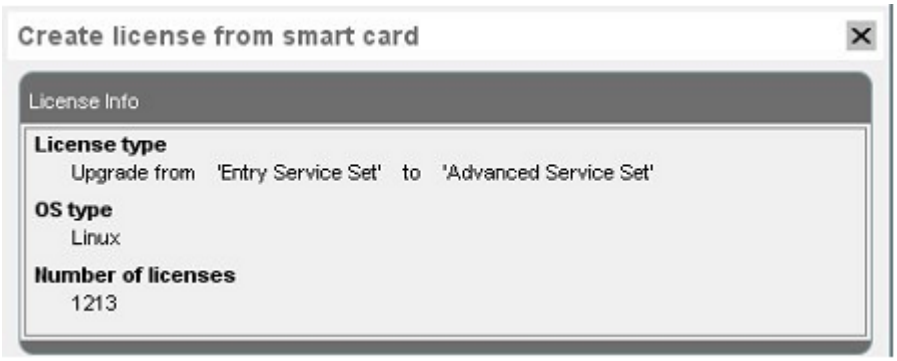


Figure 25: Create licenses from IGEL smart card

A license will be created from the license pool on the stick. After rebooting twice, the device will have the functions provided by the license.

> As an alternative, you can send UMS settings to UDC2 devices in order to transfer licenses. Reboot the devices in order to activate the new licenses.

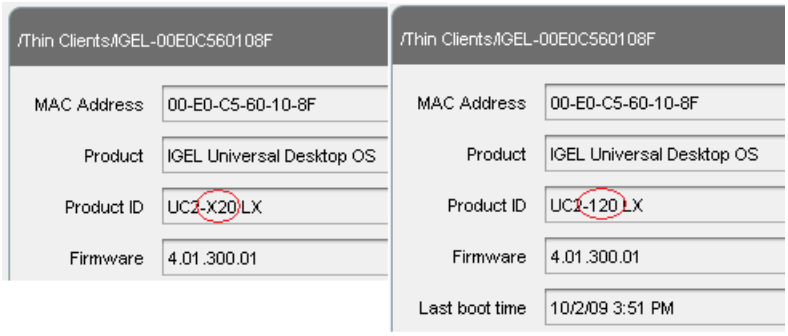


Figure 26: License management

➢ Check whether the device has used the license correctly. The product ID should have changed from X20 to 120, 520 or 720. This depends on the license type (Entry, Standard or Advanced).

  In addition, the IGEL thin clients and UDC devices licensed with the IGEL UMS will now be shown in the license management dialog.

Licenses created from the license pool are saved on the token so that you can reuse them if you need to reinstall the IGEL firmware on the device.

5.4.4. Upgrading licenses

When upgrading the license of a UD device, you should use the same mechanism with a USB token and SIM card as you do for UDC licenses.

Upgrade licenses available on a SIM card are displayed along with their license type, e.g. **IGEL Shared Workplace**. The device selection only shows suitable devices, e.g. IGEL thin clients without **Shared Workplace** license.

6. Profiles

Profiles are predefined configurations which can be assigned globally to directories, groups, users or thin clients via the Universal Management Suite. The following types exist:

Standard profiles

...can be assigned to objects (thin clients or users) directly or indirectly via directories. An object can receive its settings from a number of directly or indirectly assigned profiles.

During the assignment process, the profile settings overwrite the settings configured directly on the thin client.

Master profiles (page 76)

...allow more flexible access rights within the IGEL UMS as they can override the settings for standard profiles and have their own authorizations.

These various profile types can be combined with each other.

Special profile types

User profiles (page 70)

Standard and master profiles can be assigned to Active Directory users and thus allow:

- Shared Workplace: Changing users at a workstation
- Roaming Doctors: Changing workstations for a user

Template profiles (page 81)

Standard and master profiles can be used even more flexibly and combined with the help of values determined dynamically.

6.1. Order of priority for settings

Parameters set via a profile are blocked in the configuration dialog and indicated by a lock symbol.

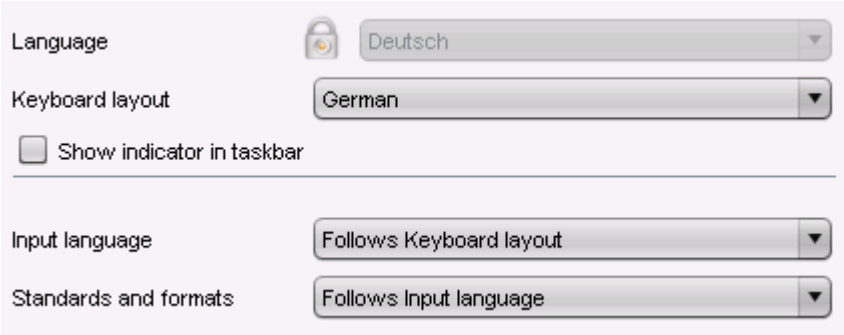


Figure 27: Setting with lock symbol

They can only be edited in the profile. The name of the profile responsible for the locked status will be shown if you move the mouse pointer over the lock symbol.

Each parameter has two value types:

- values determined by the thin client and
- value determined by the profiles.

These values exist alongside each other, although there is a rule whereby profile settings always take precedence.

If you have set a value for a parameter in a profile and then remove the assignment to a thin client, the value of the parameter will be changed back to its previous thin client value. The profile value will not be copied to the thin client settings.

6.2. Order of priority for profiles

If you have assigned several profiles to a thin client and enabled a specific setting in all profiles, you may like to know which profile provides the valid value for this setting or, in other words, which profile has priority over the others.

Try to avoid enabling the same settings in a number of profiles by setting up separate groups of active parameters for different profiles. Otherwise, the following symbolic rule applies:

> The closer an object to which the profile was assigned is to the thin client, the higher the position of the profile is in the hierarchy.

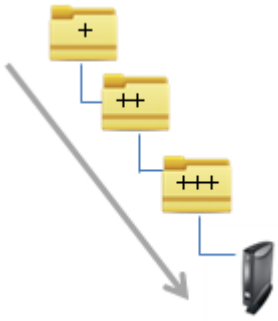


Figure 28: The priority of the standard profiles increases from one level to the next.

Higher priority	than...
closer to the thin client	further away from the thin client
Sub-directory	Higher-level directory

If a number of profiles are assigned to a directory or a number of profiles are assigned directly, the newer profile with the higher profile ID will overwrite the settings.

In order to read out the ID of a profile, point to a profile in the list of assigned profiles with the mouse pointer. A tool tip with the profile ID will be shown.

The lists of assigned profiles and indirectly assigned profiles are sorted according to the order of priority. As far as direct profiles or indirect profiles on a directory level are concerned, profiles higher in the list have higher priority.

(new related group 2)

Creating profiles 63
Exporting and importing profiles 65
Configuring profile settings 66
Overwriting sessions 68
Allocating profiles 68
Checking profiles 69
Removing assigned profiles from a thin client 69
Deleting profiles 69

6.3. Using profiles

In this chapter, you can learn about the procedure for

- *Creating profiles* (page 63)
- *Allocating profiles* (page 68)
- *Checking profiles* (page 69)
- *Removing assigned profiles from a thin client* (page 69)
- *Overwriting sessions* (page 68)
- *Exporting and importing profiles* (page 65)
- *Configuring profile settings* (page 66)
- *Deleting profiles* (page 69)

6.3.1. Creating profiles

You can create a sub-directory hierarchy in order to organize your profiles:

➢ Select the **Profile** node or a sub-directory in the UMS tree structure.

The **Profile Directory** area contained in it is shown at the right.

To create a new profile, proceed as follows:

1. Select **Profile** from the menu **System→New**

   or select the corresponding option from the context menu
   or import a previously created profile.

The **New Profile** dialog window will appear.

> The new profile will be stored in the selected profile directory. If no profile directory was selected, it will be stored in the **Profiles** node itself.

2. Enter a **name** and a **description** for the profile.
3. Specify whether the new profile should use the settings for an existing profile or thin client.

> If you need an "empty" profile that will not use any existing settings, you must select a firmware version for the new profile. In this case, do not select an object from the tree structure.

4. Select one of the possible options:
   - **Do not enable any settings**
   - **Enable settings whose value differs from the default value**
   - **Enable all settings**
   - **Overwrite sessions**
5. Click **Create** to set up and save the profile.

New profile - options

The options in the **New Profile** window have the following meanings:

Do not enable any settings	No settings are initially active. You have to enable the desired settings when editing the profile configuration.
Enable all settings	All available parameters for the profile are enabled. A thin client that receives settings from this profile cannot be configured directly. This option makes sense only if you would like to have all settings for a thin client managed on the basis of this profile.
Enable settings whose values differ from the default value	This option is advantageous only if you would like to distribute the settings for a pre-configured thin client to additional devices. This manual configuration is performed on the basis of a profile which can be assigned to further devices.
Overwrite sessions	Overwrites the sessions defined for the thin client with sessions defined for the profile. If the checkbox is empty, the sessions defined in the profile are added to the sessions which were previously defined for the thin client.

In many cases, profiles which contain all parameters for an item of firmware take up space in databases and backup files unnecessarily. You should therefore use this option only if it seems necessary. In the majority of cases, it is advisable to configure a thin client on the basis of several profiles with specific configuration parts. If firmware has not yet been registered in the database, profiles cannot be created because information regarding the settings which are then assigned to the profile is needed. You can create profiles only with a firmware version which is already registered in the UMS Database.

6.3.2. Exporting and importing profiles

In the IGEL UMS, you can export profile configurations from the database to the file system. This can be helpful for backup purposes or when importing the profile data from one UMS installation to another.

If you have an XML file with profile data or a ZIP archive with several profiles, you can import these to your UMS installation or to an installation other than the original one.

Exporting a profile and firmware

> The profiles are converted into the XML format. Make sure that you do not make these files public if the source profiles contain passwords or other confidential data!

To export an individual profile, proceed as follows:

1. Right-click the profile.
2. Select the command **Export Profile.**

To export a number of profiles in one file (ZIP archive), proceed as follows:

1. Highlight the desired profiles using the Ctrl and Shift keys.
2. Select **System→Export→Export Profile.**

   The **Export Profiles** window will open.

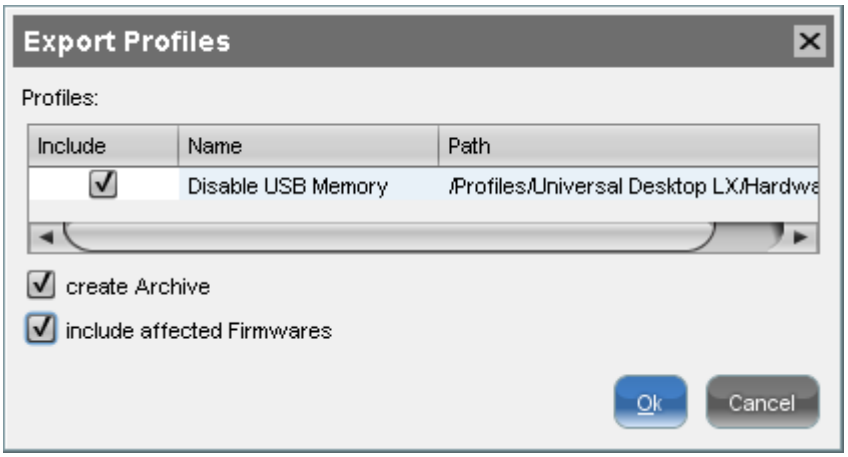


Figure 29: Export profile

3. Select the destination file.

   Please note that existing files will be overwritten with the new profile data.

The firmware information can be exported to an archive along with the profile data. This allows importing to a UMS installation without the relevant firmware being registered. This can now be imported together with the profile.

Importing a profile and firmware

To import an individual profile, proceed as follows:

1. Click **System→Import→Import Profiles**.
2. Select the `XML` file or archive containing your profile(s).

   The **Import Profiles** dialog window will appear. This shows the name and firmware version of each profile configuration contained in the file you have selected.
3. Uncheck one of the boxes in the left row of the table to exclude the relevant profile from the import process.

   During the import, you can retain the original directory path of the profile. Alternatively, the profile can be placed in the main directory.

   A dialog window shows whether all the selected profiles were imported.
   An item of firmware from an archive which was previously not present in the database will automatically be imported together with the corresponding profile.

Importing profiles with unknown firmware

Profiles whose underlying firmware is not contained in the database or the import file cannot be imported and will be highlighted in red in the import view.

Such profiles can contain settings which do not feature in any of the registered firmware versions.

To import profiles with unknown firmware, proceed as follows:

1. Click the firmware field that is highlighted in red.
2. Select any firmware version that is known to the system.
3. Import the profile.

If you select an item of firmware that is known to the system, the version will be implicitly converted. Normally, this has only a negligible effect on the profile settings if you select a similar firmware version or a newer version of the same model. However, unknown firmware settings will be lost in the process.

6.3.3. Configuring profile settings

The properties of a profile consist of so-called description data and the profile configuration.

Description data consist of the name of the profile, a description text, the firmware version and the overwrite flag for sessions. Example:

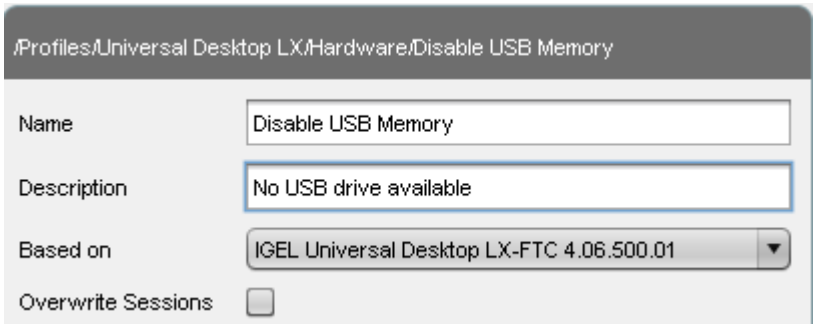


Figure 30: Description data of profile

➢ Edit these data and update them in the database via **Edit→Save Description Data**.

Please note that settings that are not supported in the new firmware will be lost in the profile if you update the firmware of thin clients and you would also like to update the profile assigned to the clients.

To edit the settings for the profile, proceed as follows:

➢ Double-click a profile

or select a profile in the tree structure and click **Edit→Edit Configuration**.

Paths highlighted in blue in the configuration menu lead to parameters that have already been set via the profile. These are shown with a lock in the thin client configuration.

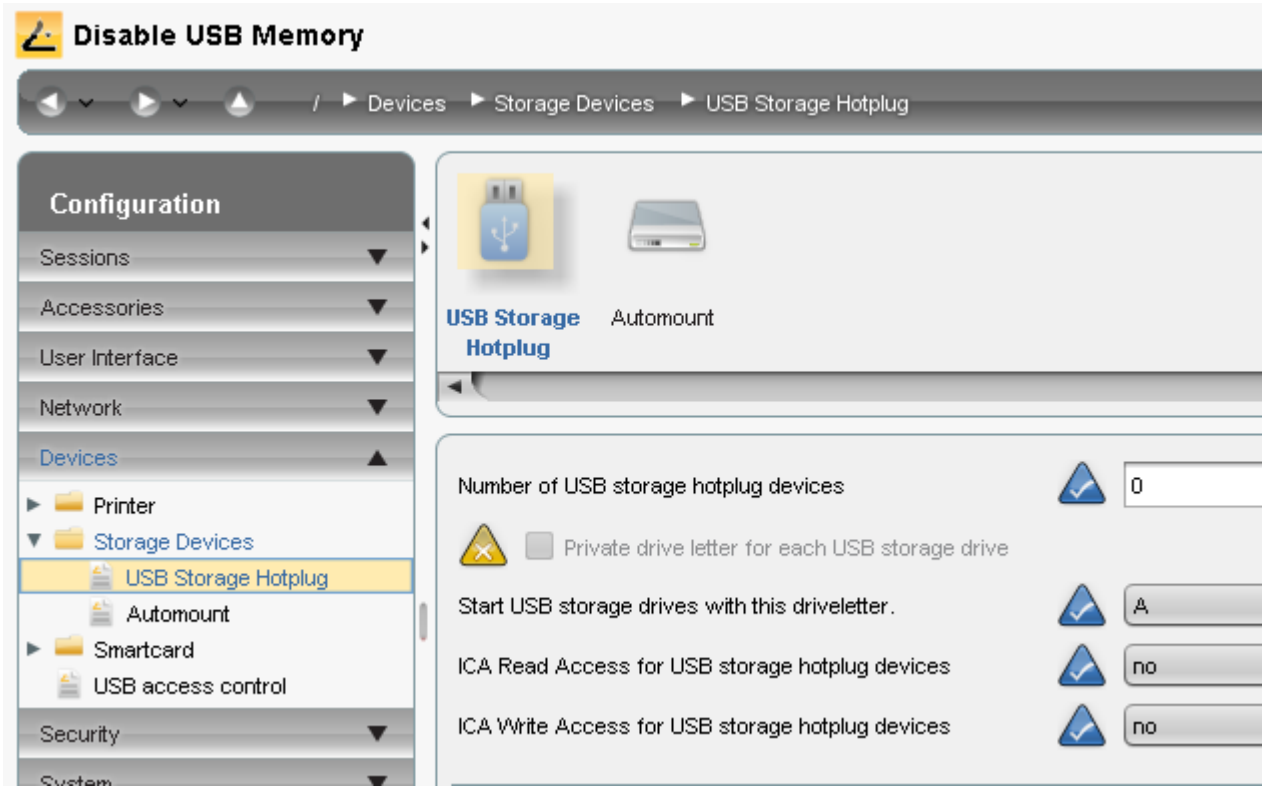


Figure 31: Profile settings

To determine when your changes are to take effect, proceed as follows:

1. Make the required changes.
2. Click **Save**.
3. Decide whether the new settings are to take effect immediately or when the relevant thin clients next boot.

   This corresponds to the way the system behaves when the thin client configuration is changed directly.

6.3.4. Overwriting sessions

The **Overwrite Sessions** profile option ensures that only the sessions for this profile are created on the thin client. Sessions created in other profiles or directly in the thin client configuration are disabled.

If a number of profiles with the **Overwrite Sessions** option enabled are assigned (directly or indirectly) to a thin client (or Shared Workplace user), the profile with the highest priority "wins", i.e. only the sessions for this profile are available on the thin client.

Exception: If the highest-priority profile with the option enabled is a standard profile and if *master profiles* (page 76) with sessions are assigned to the thin client or user, the thin client will receive all sessions of the overwriting standard profile and the master profiles – sessions in master profiles can only be overwritten by a master profile.

6.3.5. Allocating profiles

If you have created a profile and changed its settings, you can assign it to the thin clients. You can assign an unlimited number of profiles to each thin client.

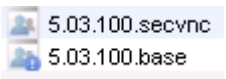
Fundamentally speaking, there are two modes of assignment: **direct** or **indirect**.

Indirect means that you assign the profile not to an individual thin client but to a thin client directory and all thin clients in this directory take on the settings for this profile (see *Order of profiles* (page 62)).

Please note the following rules:

- If you assign a profile to a directory, it is **indirectly** assigned to each thin client in this directory including the sub-directories.
- If you subsequently move a thin client to this directory, the directory profiles will affect this thin client too.
- If you remove a thin client from this directory, the profile will no longer influence this client.

Assigned profiles with configuration changes not yet transferred to the thin client are flagged with an exclamation mark in the list of assigned objects:



6.3.6. Checking profiles

If you have assigned a profile to a thin client, check the results:

1. Select a thin client and click **Edit→Edit Configuration**.

   The current configuration for the thin client will be displayed.
   A lock symbol will be shown in front of each overwritten setting, i.e. in front of an active setting for an assigned profile. The value that you have specified in the profile will be shown. You cannot change the setting here.

2. Move the mouse over the lock symbol.

   A tool tip will show the profile from which the parameter value was taken. This is useful if you have assigned more than one profile to the thin client. If a setting is active in a number of assigned profiles, the value in the most up-to-date profile will apply.

In the **Assigned Objects** area, you can navigate to an assigned thin client, profile or assigned file, or edit the configuration.

- Select an object.
- Click the **Edit** symbol to edit the object.
- Click the **Navigate** symbol to navigate to this object in the tree structure.
- Double-click an assigned object to jump straight to it.

6.3.7. Removing assigned profiles from a thin client

You can remove assigned profiles from a thin client or a thin client directory:

1. Select a thin client or a thin client directory in the **Profiles** window area.
2. Click the **Remove** symbol.

   or

3. Select an assigned profile from the list in the window area for a thin client or a directory in the **Assigned Objects** area.
4. Click the **Remove** symbol.

This profile will now no longer affect the individual thin client(s) in the directory. The overwritten value for the settings is reset to the value which was valid before the profile was assigned.

6.3.8. Deleting profiles

If you would like to delete a profile, you have the following options:

1. Select the profile in the UMS navigation tree.
2. In the symbol bar, click on the **Delete** symbol

   or press the Del button on your keyboard
   or right-click on the profile and select the **Delete** option from the context menu.

The same applies to directories too. These are deleted along with all sub-directories and profiles.

If you delete a profile, it will be removed for every thin client or every thin client directory to which it was assigned. The profile values no longer affect the thin client settings. In addition, all settings for the profile from the database will be deleted.

6.4. User profiles – IGEL Shared Workplace

IGEL Shared Workplace is an optional feature of the IGEL Universal Desktop firmware which must be licensed separately. It allows user-dependent configuration based on settings profiles created in the IGEL Universal Management Suite and linked to the user accounts in the Active Directory. In the process, user-specific profile settings are passed on to the thin client along with the device-dependent parameters. You will find an overview of the parameters which can be individually configured for a user further on in this document.

Typical applications for Shared Workplace are workstations used for shift work or in call centers, where different staff members use the same device and thus need their own individual settings, such as for session types or mouse-button configuration for right/left-handed operation.

Another possible application is in roaming environments where users frequently switch IT workstations, e.g. in hospitals and at service/ticket counters, checkouts and reception areas. After a user has logged in, the thin client licensed for Shared Workplace automatically configures itself. It does this via the UMS server using the individual or group profile stored in the UMS database. These profiles can easily be assigned to a user in the IGEL Universal Management console using a convenient drag-and-drop procedure. In environments with an increasing number of Shared Workplace workstations, IGEL recommends using the new UMS High Availability Extension. The high level of UMS Server availability achieved ensures that users receive their own personalized profile at all times.

The IGEL Shared Workplace feature is included in the IGEL thin client firmware from version 4.08.100 (UD-LX) and 2.09.500 (UD-ES) and can be used in conjunction with the new version 4 of the IGEL UMS.

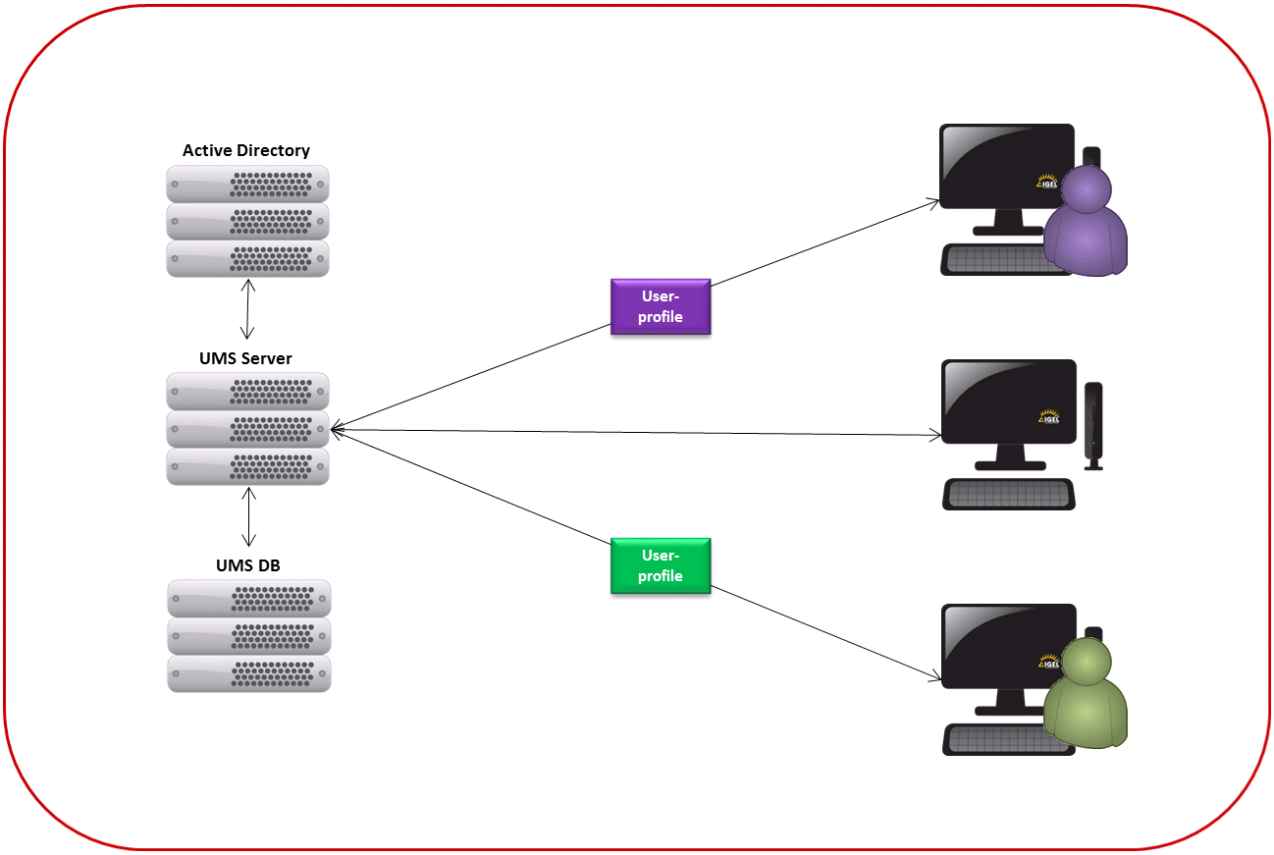


Figure 32: IGEL SHARED WORKPLACE scenario

6.4.1. Setting up and using the feature

In order to be able to use IGEL Shared Workplace, the following requirements must be met:

- Users who are to be given a specific profile must be set up in an Active Directory.
- Thin clients which are to allow user logins must have a license for the IGEL Shared Workplace function. This can be transferred to the thin clients via the IGEL UMS license management system.

  If a thin client has been given a license for IGEL Shared Workplace, this cannot simply be canceled. The function itself can be disabled via the list of available services in the thin client configuration, or the facility to log in via IGEL Shared Workplace remains disabled.
- Although not absolutely necessary, the use of the High Availability Extension for the IGEL Universal Management Suite is recommended for larger installations. This will ensure a high level of availability for the user profiles in the network.

If you use IGEL Shared Workplace with IGEL Universal Desktop ES, bear in mind that the default password **user** must be set for the standard user **user**, otherwise it will not be possible to log in.

Configuration in the UMS Console

In this chapter, you will find out how to link an Active Directory, assign user profiles, enable the IGEL Shared Workplace, set up the user login/logout and assign priorities.

Linking an Active Directory

Other LDAP servers (Novell eDirectory, OpenLDAP etc.) cannot be used for IGEL Shared Workplace user authentication purposes.

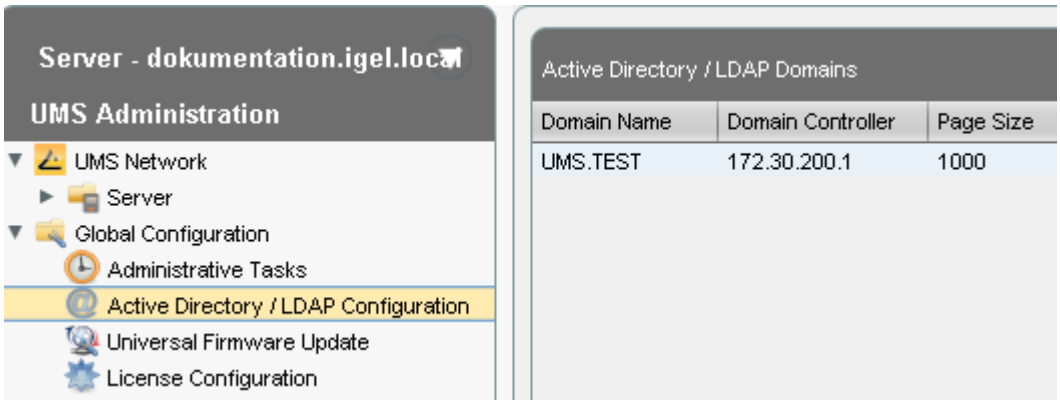


Figure 33: Connect Active Directory

Assigning a user profile

- Select an object within the AD structure. You will need to authenticate yourself vis-à-vis the Active Directory in order to do so.
- Assign the desired user profile to this object:

  Server→Shared Workplace User→[Active Directory]→[Object]

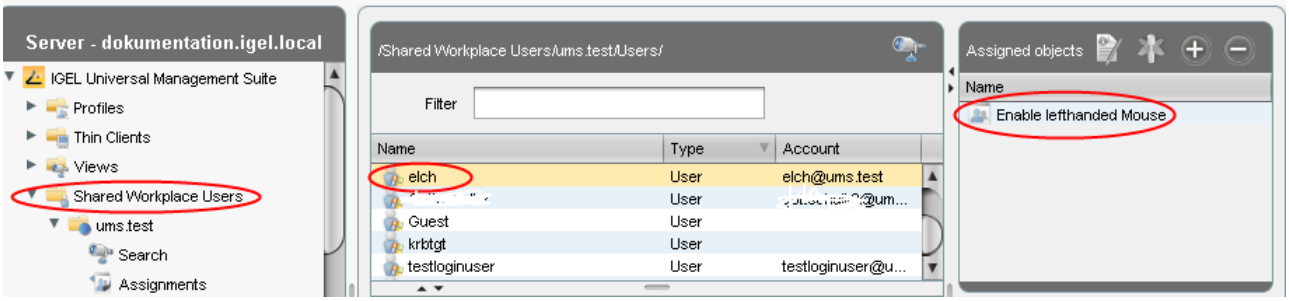


Figure 34: Assign user profile

As with thin clients, a number of individual profiles can be assigned. In this case, indirectly as well as directly assigned profiles will be taken into account.

Activating IGEL Shared Workplace

- Activate the IGEL Shared Workplace function for one or more thin clients and define the links for logging out of the system (Linux).
- You can do this by assigning an appropriate profile to the thin client or in the setup for the individual thin client:

  Setup/Configuration→Security→Login→IGEL Shared Workplace

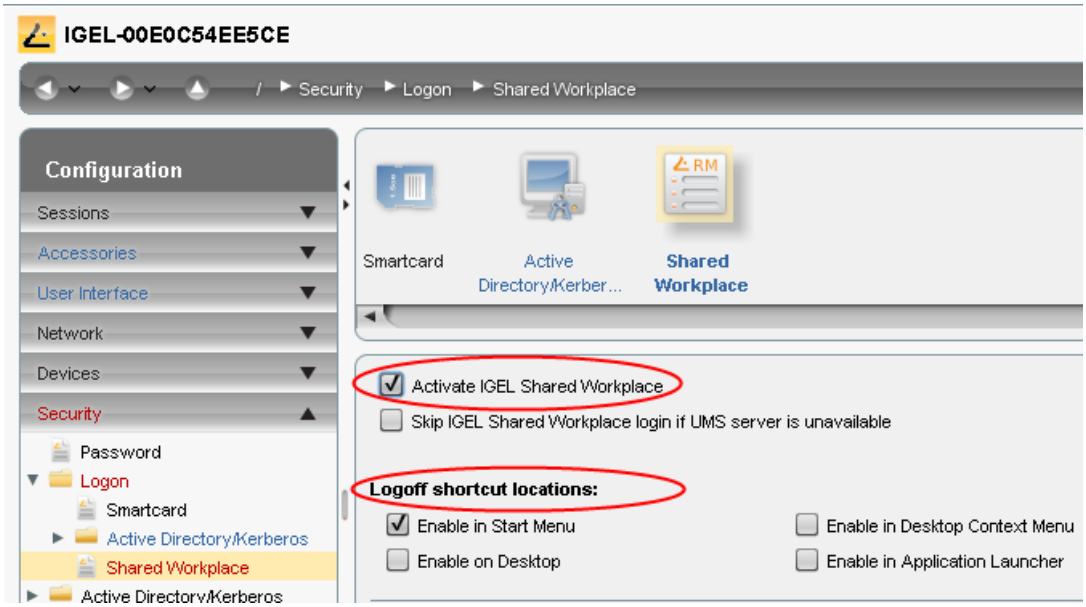


Figure 35: Activate IGEL Shared Workplace

User login

After the next reboot, the thin clients set up for IGEL Shared Workplace will show a login window (provided that they are licensed for this function). A user can then log in at the thin client using their AD login data and will receive the profiles saved for them from the UMS.

The thin client configuration which is actually active for the user logged in is the result of cumulating all profiles which have been assigned either directly or indirectly to the thin client or the user.

Order of priority for profiles

If you allocate a number of profiles, it may be that specific user or client settings are made a number of times. A certain order of priority must be defined for these settings.

The priority of the profiles is as follows:

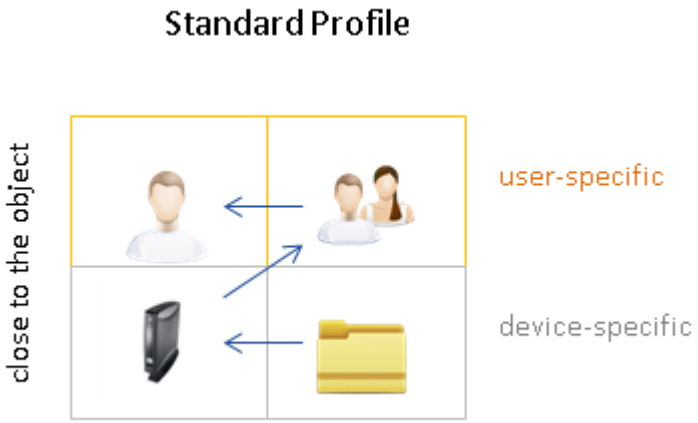


Figure 36: Hierarchy of standard profiles

Higher priority	than...
user-specific profiles	device-specific profiles
closer to the user/thin client	further away from the user/thin client

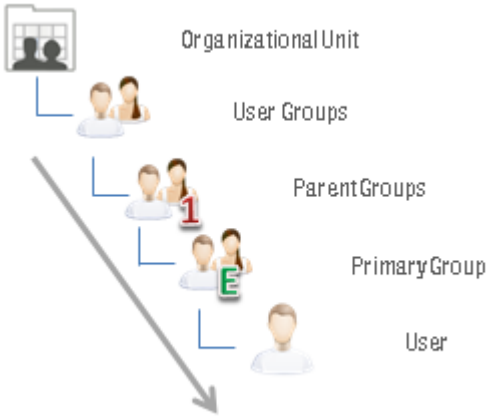


Figure 37: The priority of the standard profiles increases from one level to the next.

Higher priority	than...
primary groups	other groups
other groups	organizational unit

Rules within same levels

- Profiles which are assigned to the user's primary group are prioritized in descending order according to profile ID (highest ID = highest priority).
- Groups within a level are prioritized in alphabetical order.
- Profiles assigned directly to the user/device are prioritized in descending order according to profile ID.

Logout and change of user

As a user, you log out of a thin client with the Windows Embedded Standard system via the start menu.

For IGEL Universal Desktop Linux, you can place buttons for logging out in the **Application Launcher**, on the desktop and in the IGEL Menu.

A hotkey for logging out can also be configured. You will also find these settings under **Setup/Configuration→Security→Login→IGEL Shared Workplace**.

6.4.2. Parameters configurable in the user profile

Not all parameters available in an item of firmware can be configured on a user-specific basis. Whilst, in a number cases, this is due to technical reasons, there are also instances where it makes sense to configure a parameter only for the device rather than for the user.

The device-specific system settings for the IGEL operating systems which **cannot be configured effectively** are listed below. No check takes place in the IGEL UMS.

Universal Desktop Linux (page 75)

Universal Desktop Windows Embedded Standard (page 76)

UD Linux device-specific parameters

The following system settings are **not** configurable in the user profile:

- Network settings including those for the network drives
- Screen configuration for IGEL Linux v5 to 5.05.100 and for IGEL Linux v4 to 4.13.100.

  Depending on the hardware used, display errors may occur if the user changes the resolution or rotates the screen even under IGEL Linux from Release 4.14.100.

- Touchscreen configuration
- Update settings
- Security settings
- Remote management
- Customer-specific partition
- Server for background images
- Customer-specific bootsplash
- Browser plug-ins
- SCIM entry methods, however, these can be enabled on a user-specific basis
- Three-button mouse emulation
- Appliance Mode (VMware View, Citrix XenDesktop and Spice)

UD W7 device-specific settings

The following system settings **cannot** be configured in the user profile:

- Language, standards and formats
- Network settings including those for the network drives
- Active Directory login
- USB device configuration
- List of the available features and Windows Services
- Update settings
- Setup session
- User and security settings
- File Based Write Filter
- Energy options
- Remote management
- Appliance Mode (VMware View and Citrix XenDesktop)

6.5. Master profiles

The aim of introducing master profiles is to be able to reproduce the more complex system of rights management for UMS administrators in very large or distributed environments. Important profile configurations can now be assigned to all registered thin clients on a priority basis without having to revoke the rights of other administrators to manage other settings or profiles.

Master profiles have their own section in the IGEL UMS navigation tree. In terms of their effects, they are identical to standard profiles, but are prioritized differently. Master profiles are profiles whose settings override all standard profiles.

Figure 38: Master profiles in the tree

6.5.1. Enabling master profiles

You can specify yourself whether or not you would like to use master profiles. They are enabled as standard.

To disable the **master profiles** function, proceed as follows:

1. Select **Additional Settings** in the **UMS Administration**.
2. Disable **master profiles**.

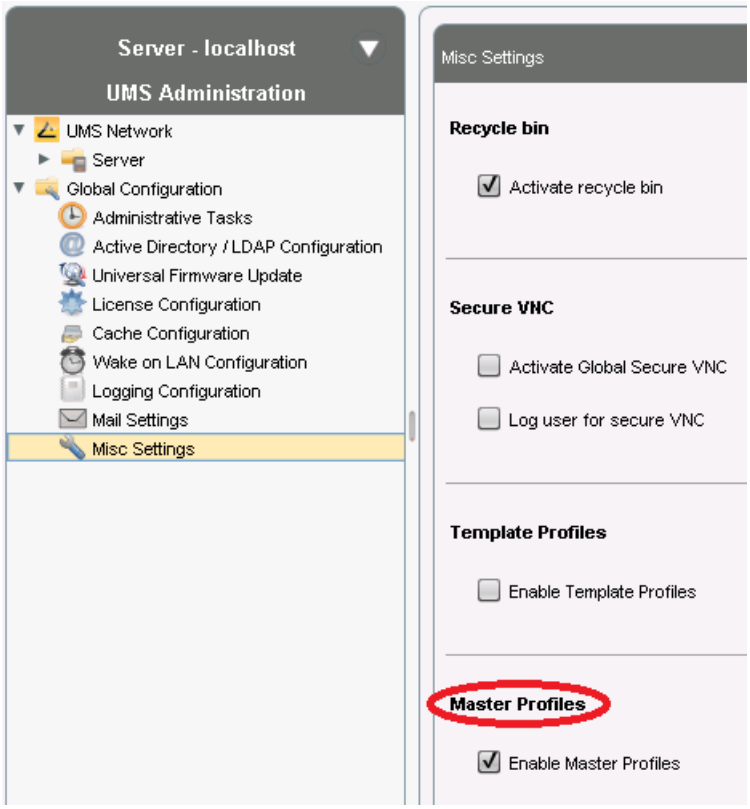


Figure 39: Disabling master profiles

6.5.2. Order of priority for profiles

Master profiles override all standard profiles.

Master profiles are prioritized the other way around compared to the standard profiles. This means that a competing profile setting is prioritized higher the higher up in the hierarchy the profile is assigned, i.e. the further away from the object it is.

The priority of the master profiles is as follows:

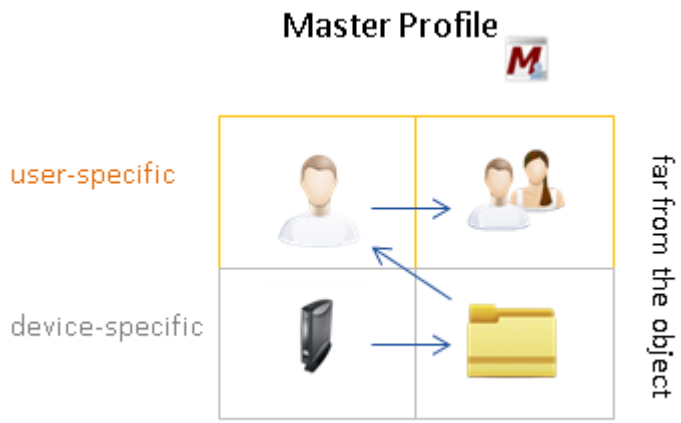


Figure 40: Hierarchy of master profiles

Higher priority	than...
user-specific profiles	device-specific profiles
further away from the user/thin client	closer to the user/thin client

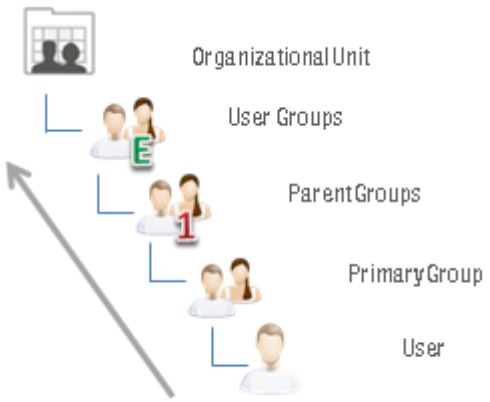


Figure 41: The priority of the master profiles decreases from one level to the next.

Higher priority	than...
organizational unit	other groups
other groups	primary groups

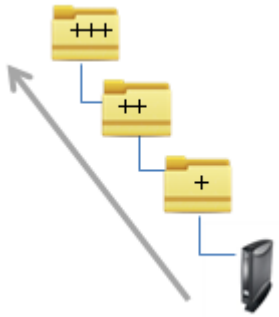


Figure 42: The priority of the master profiles decreases from one level to the next.

Higher priority	than...
further away from the thin client	closer to the thin client
higher-level directory	sub-directory

Summary of priorities in descending order

1. User-specific master profiles ("closer" to the user means lower priority)
2. Device-specific master profiles ("closer" to the device means lower priority)
3. User-specific standard profiles ("closer" to the user means higher priority)

4. Device-specific standard profiles ("closer" to the device means higher priority)

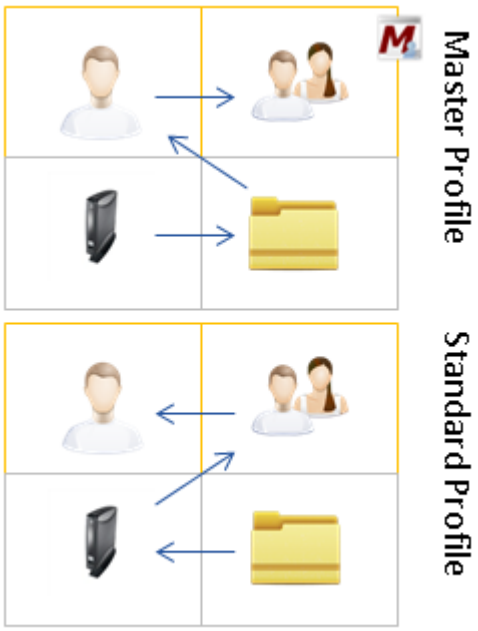


Figure 43: Summary of priorities

Rules within same levels

- Master profiles which are assigned to the user's primary group are prioritized in descending order according to profile ID.
- Groups within a level are prioritized in alphabetical order.
- Master profiles assigned directly to the user/device are prioritized in descending order according to profile ID.

6.6. Template profiles

A **template profile** allows you to add variables for individual parameters in the profile and to assign their **values** to thin clients.

Standard profiles AND master profiles can become template profiles through the use of variables.

Example

A company's thin clients are spread across a number of sites. All clients are to receive a browser session with the same settings via a profile, but a different start page is to be configured in the global settings for each site. It should also be possible to choose an individual session name for each site.

Previous solution

Up until now, a dedicated profile with global settings and session data would be created for each site. Sometimes, the desired combination of settings can be achieved by passing on various profiles.

Problem

In many cases, the desired settings cannot be combined via various profiles, e.g. for configuring a session. The unnecessarily large number of profiles is also difficult to manage in the long term.

Solution

The use of a single template profile offers greater flexibility. This contains all data for the browser session which are common to the thin clients as well as placeholders, so-called **template keys**. The template keys contain parameters which are to receive divergent values for different clients at different sites.

The template profile is then assigned to the clients directly or indirectly. The site-relevant template values are assigned to the particular clients that are to receive this value.

The thin client thus receives a profile whose settings are made up of fixed data updated in the profile and the template values assigned to it that are referenced by template keys in the profile.

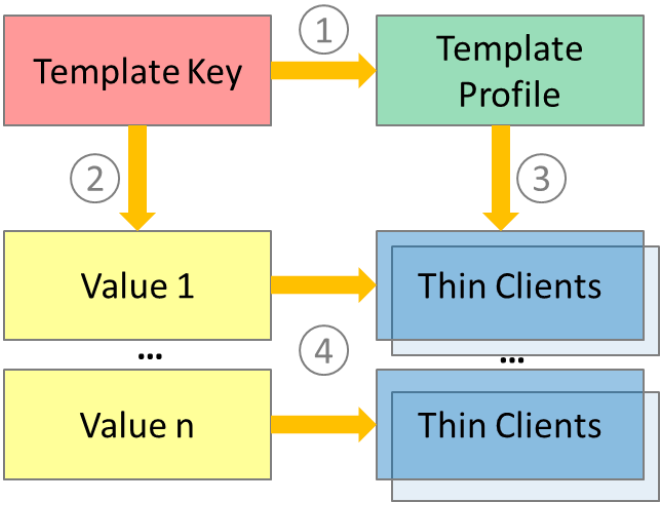


Figure 44: Template profiles functional diagram

1. Template keys are used in one or more profiles.
2. A template key has a number of values.
3. The template profile is assigned directly or indirectly to a number of thin clients.
4. A value from the key can be assigned to one or more thin clients.

A thin client thus receives not only general profile settings but also the template value assigned to it instead of the configuration which is represented in the profile by the associated template key as a placeholder.

6.6.1. Activate template profiles

If you would like to use the **template profiles** function, you must enable it first.

➢ Enable template profiles in the UMS Console under **UMS Administration→Global Configuration→Misc Settings**

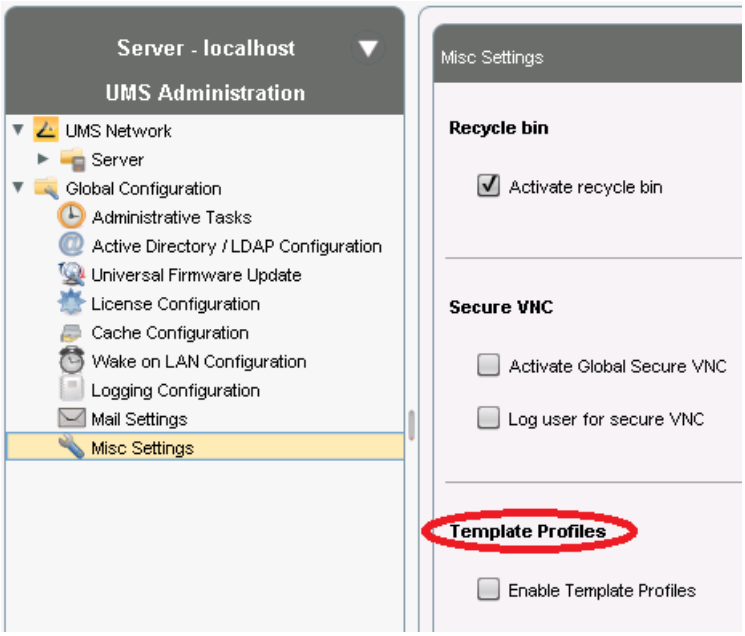


Figure 45: Activate template profiles

The **Template Keys and Groups** node will open in the navigation tree:

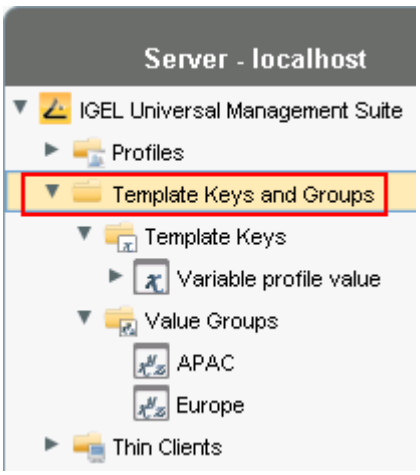


Figure 46: Template Keys and Value Groups

6.6.2. Create template keys and values

To create template keys and values, proceed as follows:

1. Open the context menu for the **Template Keys** folder.
2. Click on **New Template Key**.

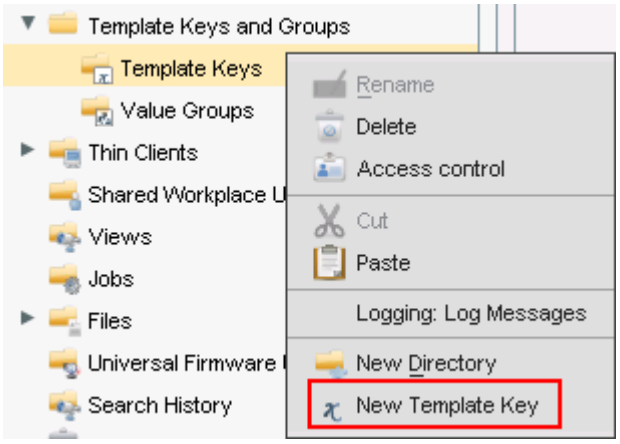


Figure 47: Create new template key

Alternatively, this function is also accessible via the menu **System→New→New Template Key**, the focus must be on the **Template Keys** node.

An assistant will guide you through the steps for creating a new template key:

3. Define a **name** for the key.
4. Select a **value type** for the key (String, Checkbox, Integer or Floating point number).
5. Optionally, give a **description** of the key.
6. Click on **Next**.

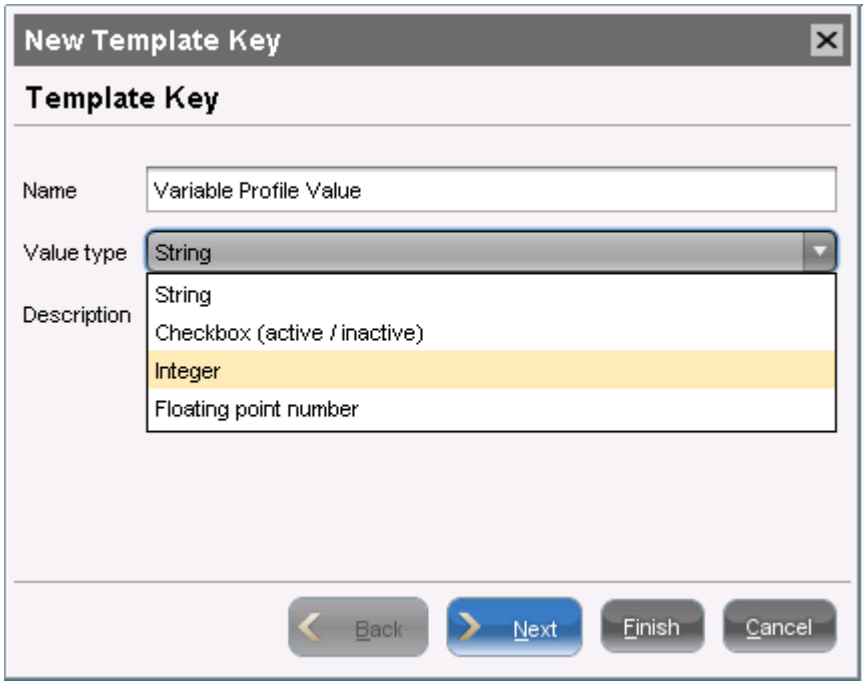


Figure 48: Basic data for a template key

To specify the first value of the key, proceed as follows:

1. Enter the desired parameter value in the **Value** field.
2. Optionally, add a **description** of the value.
3. Click on **Create Value**.

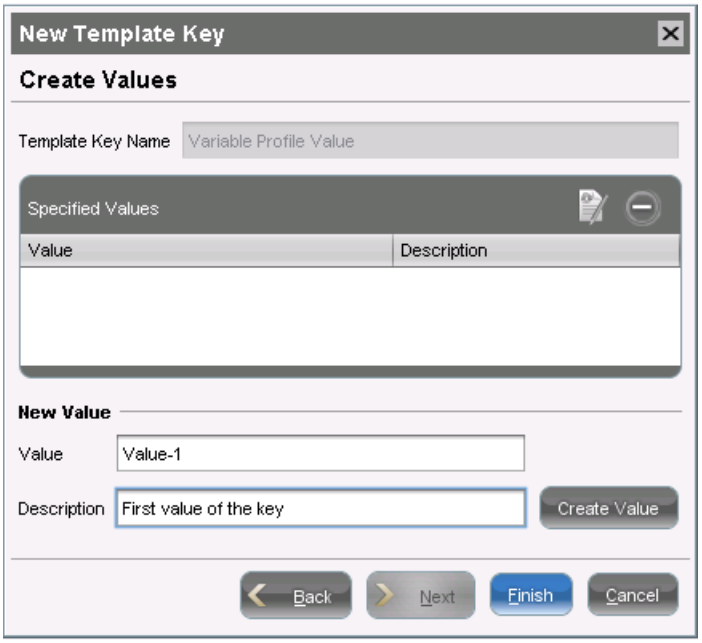


Figure 49: Create value for the key

To specify further values for the key, proceed as follows:

1. Change the entries under **Value** and **Description**.
2. Click again on **Create Value**.
3. Click on **Finish** to save the key with its values once you have created all desired values.

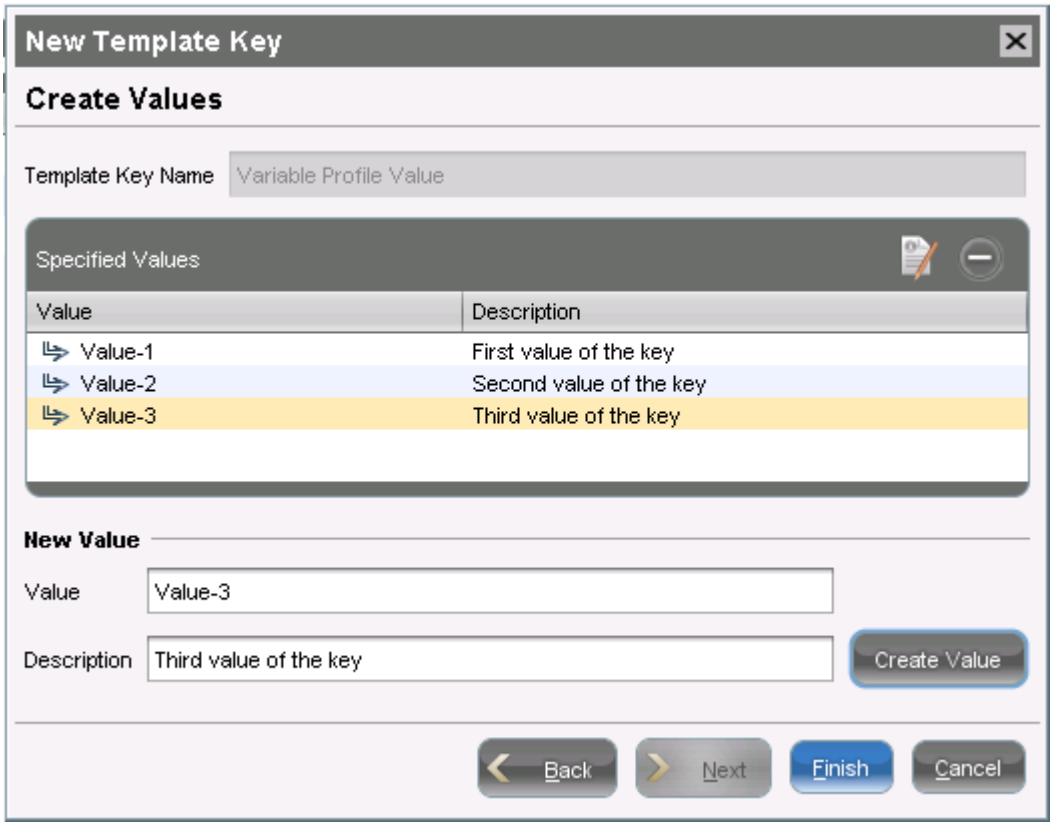


Figure 50: New template keys

The key with its values will be shown in the tree:

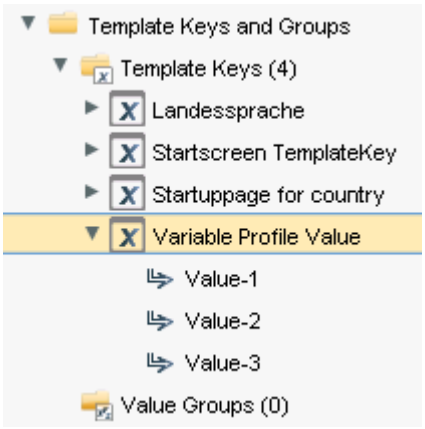


Figure 51: Template key and its values

The recommended workflow is to create template keys and values from the *profile configuration* (page 87).

Create keys and values in the profile

In profiles, specific parameters with a template key can be configured. To do this, combine the following steps to form a workflow:

- *Create template keys and values* (page 83)
- *Use template keys in profiles* (page 89)

To use template keys when configuring a profile, proceed as follows:

1. Open an existing **profile** or create a new profile.
2. Click on **Edit Configuration** in order to bring up the parameters to be updated.
3. Configure in the familiar manner the **parameter values** which are to apply to all thin clients with this profile.
4. Select a parameter which is to obtain a client-specific value from a **template key**.
5. Click the activation symbol in front of the parameter until the desired function is active (here:Template key active):

The parameter is inactive and will not be configured by the profile.

The parameter is active and the set value will be configured by the profile, template keys are not available for the parameter.

The parameter is active and the set value will be configured by the profile, template keys are available for the parameter.

Template keys are active for this parameter, the profile receives a value from the key later on.

> Certain parameters cannot be configured with template keys and only offer the option inactive or active. This applies for example to passwords or parameters which depend on other configuration settings.

6. Click on the **selection symbol** in order to select a template key.
7. Click on **Add** to create a new template key.

   An assistant will guide you through the steps for creating a new template key:
8. Give a **name** for the key.

> The **value type** for the key is stipulated by the parameter.

9. Optionally, give a **description** of the key.

Figure 52: Creating a template key

10. Click on **Next**.

To enter the first value of the key, proceed as follows:

1. Define the desired parameter value in the **Value** field.
2. Optionally, add a **description** of the value.
3. Click on **Create Value**.

> In the case of parameters with a fixed value range such as selection menu or checkbox, the available options will be provided for selection. Click on **Add all** to create values for each entry in the value range or **Create Value** to add selected entries only.

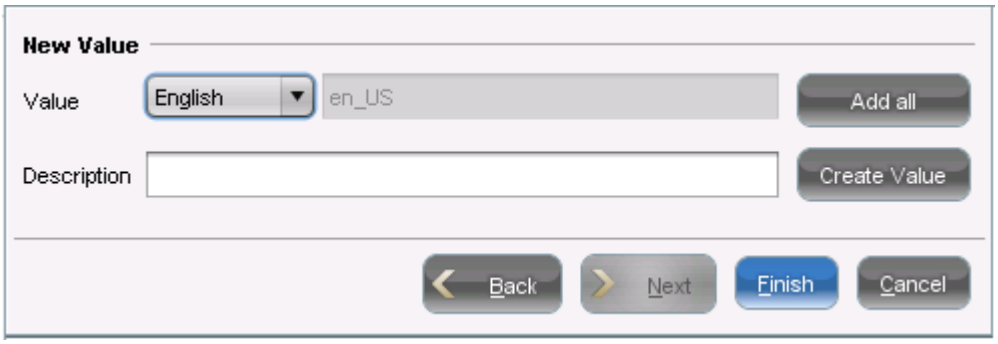


Figure 53: Defining a value for the template key

4. Click on **Finish** to save the key with its values.
5. Click on **OK** to return to the profile.

The key will be shown in the profile parameter:

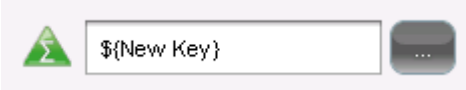


Figure 54: New template key

6. Save the template profile.

   Profiles which use at least one template key in the configuration are labeled with a special symbol in the navigation tree: .

6.6.3. Use template keys in profiles

Template keys are listed in the Template Keys and Groups / Template Keys node in the navigation tree. They can be moved to their own sub-folders.

To use a template key in the profile, proceed as follows:

1. Open an existing profile or create a new profile.
2. In the profile configuration, bring up the parameters to be updated.
3. Configure in the familiar manner the parameter values which are to be shared by all thin clients with this profile.
4. Now select a parameter which is to be supplied with client-specific values from a template key.
5. Click the activation symbol in front of the parameter until the desired function is active (here:Template key active):

   The parameter is inactive and will not be configured by the profile.

   The parameter is active and the set value will be configured by the profile, template keys are not available for the parameter.

   The parameter is active and the set value will be configured by the profile, template keys are available for the parameter.

   Template keys are active for this parameter, the profile receives a value from the key later on.

   Certain parameters cannot be configured with template keys and only offer the option inactive or active. This applies for example to passwords or parameters which depend on other configuration settings.

6. Click on the selection symbol to choose a template key.
7. Double-click on the desired template key.

   Alternatively, you can create a new key, see *Create template keys and values in the profile* (page 87).

8. Click on **OK**.
9. **Save** the template profile.

   Profiles which use at least one template key in the configuration are labeled with a special symbol in the navigation tree: .

6.6.4. Assign template profiles and values to the thin clients

Once you have created the **template keys** and **values** and configured **profiles** using the template keys, you will need to bring together the keys and values again on the thin client.

To assign to a thin client a template profile and the values needed to replace the keys, proceed as follows:

1. Select a **template profile** and assign it in the usual manner to a group of thin clients or a thin client directory.
2. Select a **value** for each **template key** used in the profile.
3. Assign the relevant values to the corresponding thin clients.

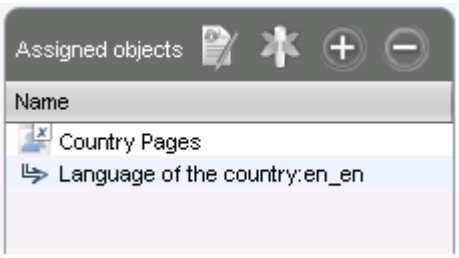


Figure 55: Example of template profile and value assignment

4. Assign further key values to further thin clients. Several values for various keys can also be assigned collectively (Shift and Ctrl keys).

Each thin client must then have an assigned value for each key in the assigned profiles.

To check that template profiles and values have been assigned correctly, proceed as follows:

1. Click on **Thin Clients** in the top menu bar.
2. Select **Check the Template Definitions**.

   The selected and checked thin clients are flagged according to the result:

   all template keys are defined

   missing template keys

3. Double-click on the message in the message window to open the error log for the check function:

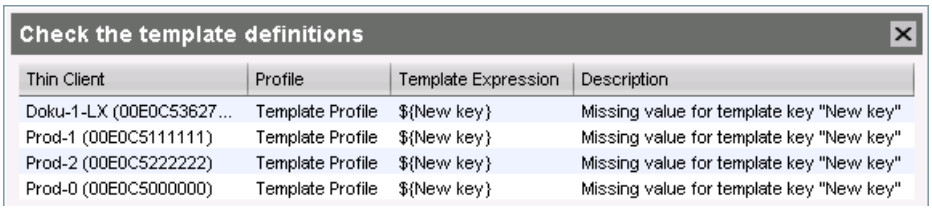


Figure 56: Check log

Or click on a thin client and the results of the check will be shown immediately:

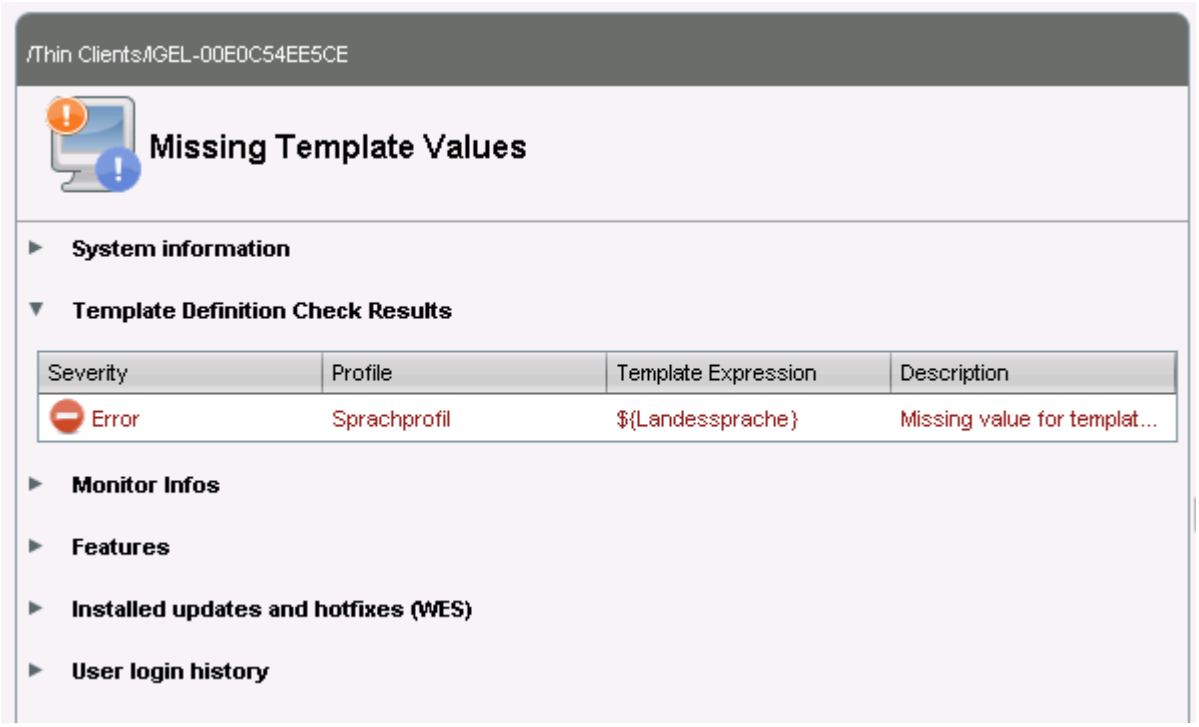


Figure 57: Results of check on the thin client

As soon as the thin clients receive their updated profile settings (e.g. automatically after restarting the clients), the keys contained in the profile for each thin client will be replaced by the corresponding value from their assignment to the thin client and then transferred to the thin client. The local thin client setup thus receives only the usual parameter values and no more keys.

6.6.5. Value groups

In value groups, logically associated values from various template keys can be brought together and assigned together to thin clients.

If for example you have various profiles which are to receive country-specific settings via template keys and value assignments, all values for a country / a language can be grouped in a value group. When such a group is assigned, a thin client also receives all values for its country / its language contained in it.

To create a group, proceed as follows:

1. Create a **template profile** with keys and values.
2. Click on **System→New→New Value Group** in order to create a new value group.
3. Enter a **name** and description for the group.
4. Select the valid values from each key, multiple selections are possible.

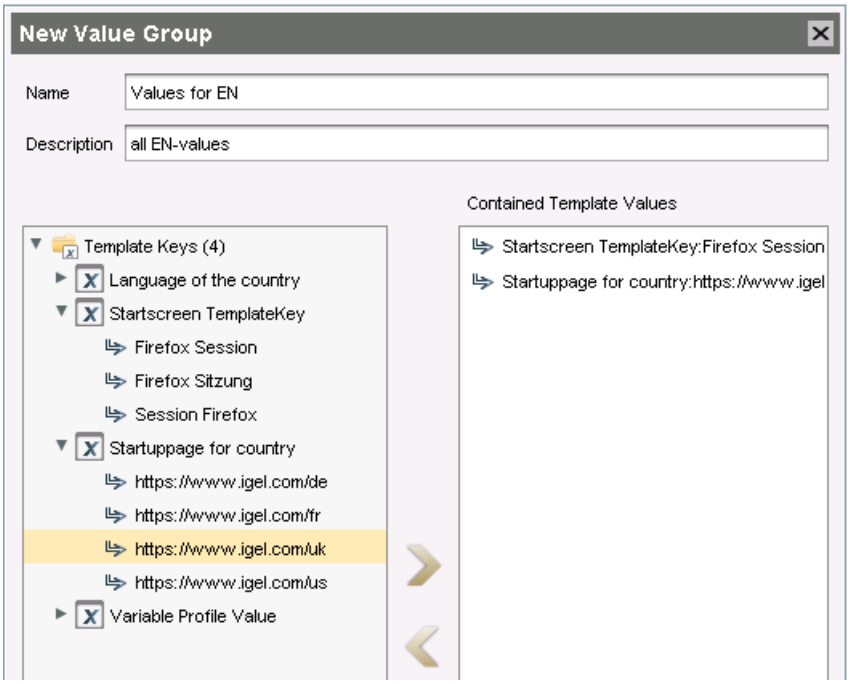


Figure 58: Selecting key values

5. Confirm your settings by clicking on **OK**.
6. Create further groups.

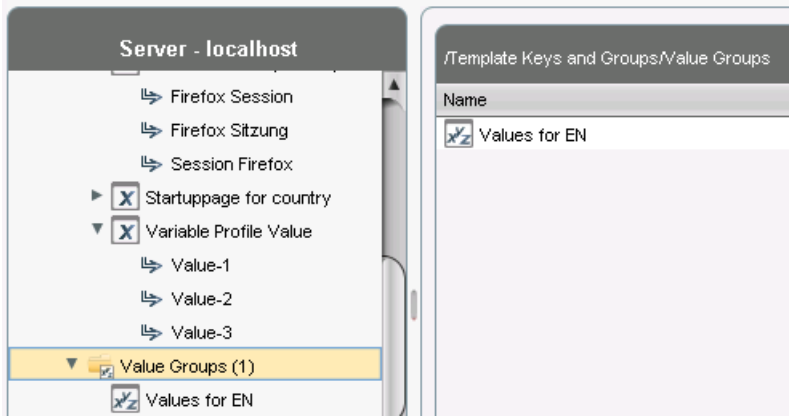


Figure 59: One value group per country

7. Assign the template profile to all thin clients.
8. Assign the appropriate group in each case to the devices.
9. Highlight the **Thin Clients** tree node.
10. Click on **Thin Clients→Check the Template Definitions** in order to check the definitions.

The result is shown in the message window.

After the next restart or a manual transfer, the thin clients will receive the new session data with shared and country-specific profile settings.

The advantage of this method is that you only need to add further key values to the relevant value group in the future in order to assign these to the site's thin clients. In addition, a better overview is possible if there are a large number of template keys and values.

7. Views

A thin client view is a selection of the thin clients available in the database which is created on the basis of definable rules. All thin clients which satisfy this rule are shown in the view.

Example:

You would like to view a list of the thin clients which have an IP address in a specific address range. In order to generate this list, you can create a view whose rule is determined by the IP address range. The views are shown in the UMS tree structure and you can configure access rights for this purpose.

Views not only provide information regarding the database content but can also be used for example to define planned tasks (such as a firmware update) for a specific selection of thin clients. As a result, you do not need to assign individually to the task the thin clients that are to be updated. Instead, the devices are determined on the basis of the view, e.g. using the firmware already installed, for the duration of the task.

A view does not make changes to thin client settings or the directory structure of the UMS tree. It merely offers a specific view of the thin clients registered in the UMS.

7.1. Creating a new view

To create a new view, proceed as follows:

1. Move the mouse over the **Views** tree node.
2. In the context menu, select **New View**

   or select **System→New→New View** in the menu.
   The **Create New View** window will open.
3. Give the view a name and a more detailed description.
4. Click **Continue**.

   The **Select Search Parameter** window will open.
5. Gradually link together several criteria in a logical fashion.
6. Define the view parameters, e.g. for the firmware under 4.09.100 if you would like to distribute this update and all clients with older firmware are to be updated.

   Equal to, **Higher than** and **Lower than** are available as comparative operators. You can also define a regular expression for the search.
7. Click **Continue**.

   The **Create New View** window will open.
8. Click **Create View** to finish creating the view

   or specify your search in more detail.

In the chosen example, we add a further restriction in the form of the product ID. This makes it possible to narrow down the selection to UD LX devices for which the new firmware is suitable. To do this, select the regular expression `UD.*LX`. This will capture all Universal Desktop Linux-type devices.

7.1.1. Example of how to create a view

The example shows the following individual steps:

1. We give the view a name and a description: `Update UDLX, update to 4.09.100` and select a first search parameter: **Firmware version**

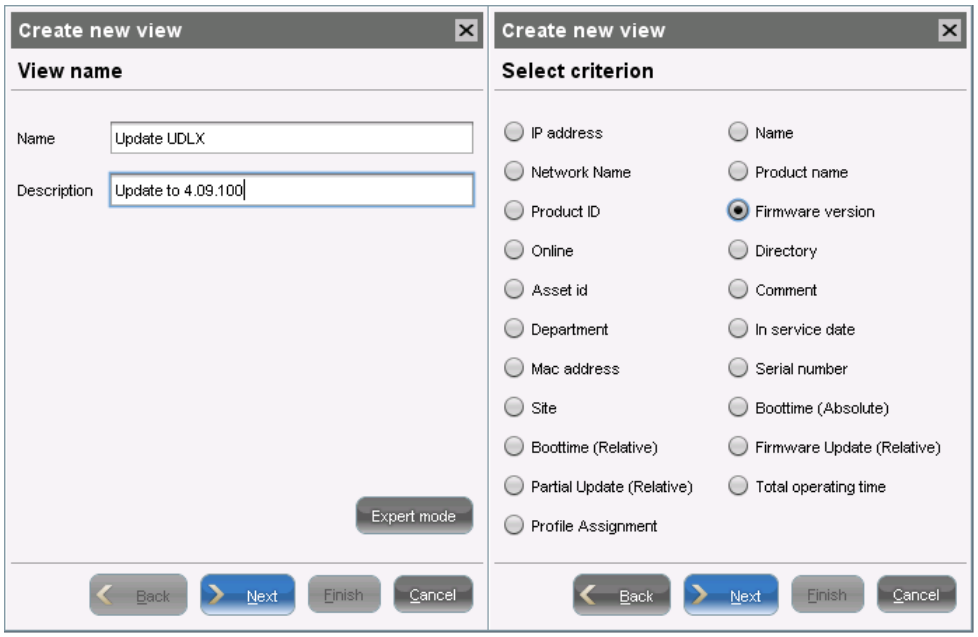


Figure 60: Define search parameters

2. We define a first search criterion: `below 4.09.100` and select further restrictions: **Next→Narrow search criterion**

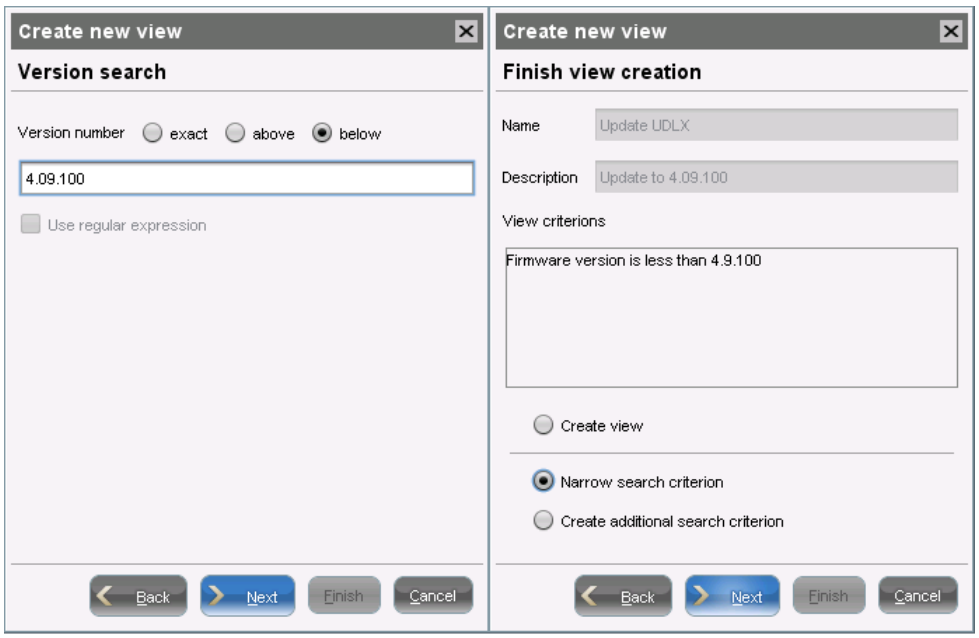


Figure 61: Create new view

3. As a further search parameter, we select **Product ID**

   and as a search criterion we define `UD.*LX` and enable **Use Regular Expression**.

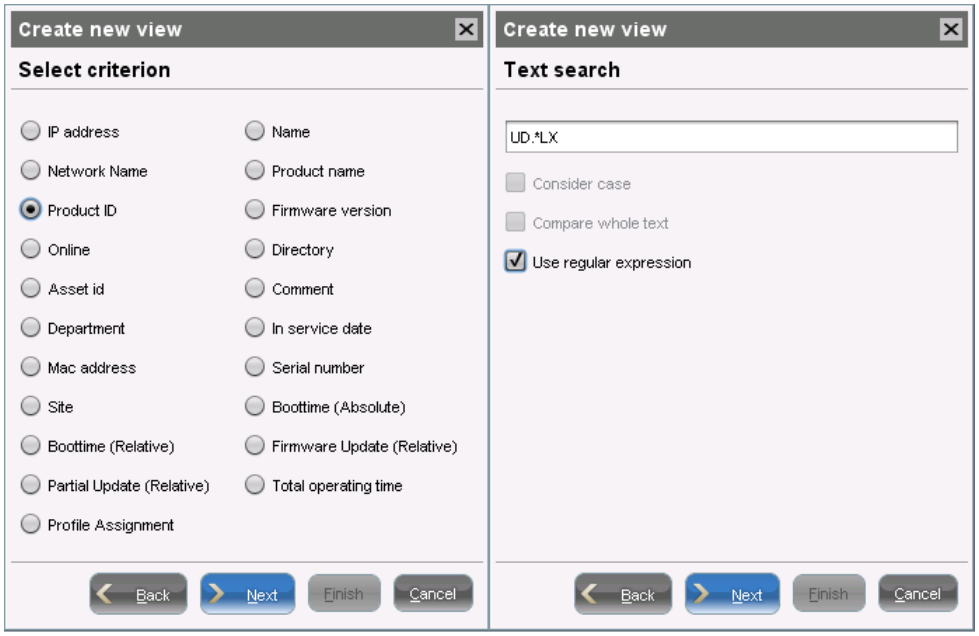


Figure 62: Text search

4. We check the **Create View** checkbox and click **Finished**.

   The result is shown in the content panel.

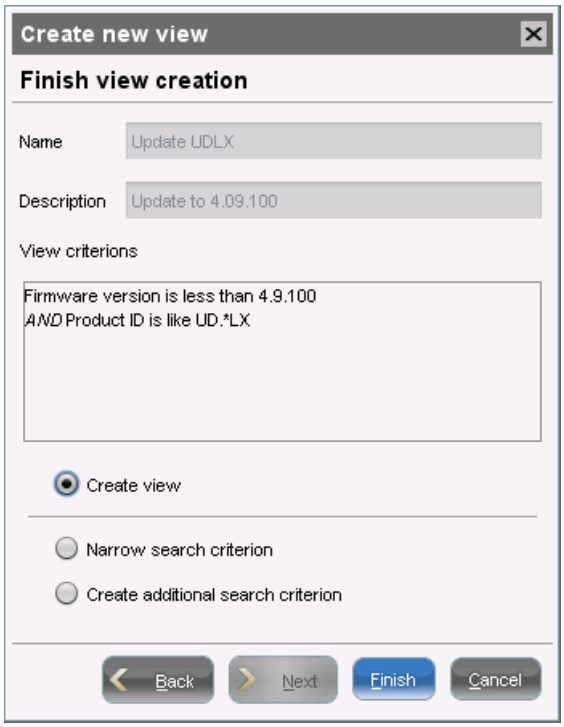


Figure 63: Finish view creation

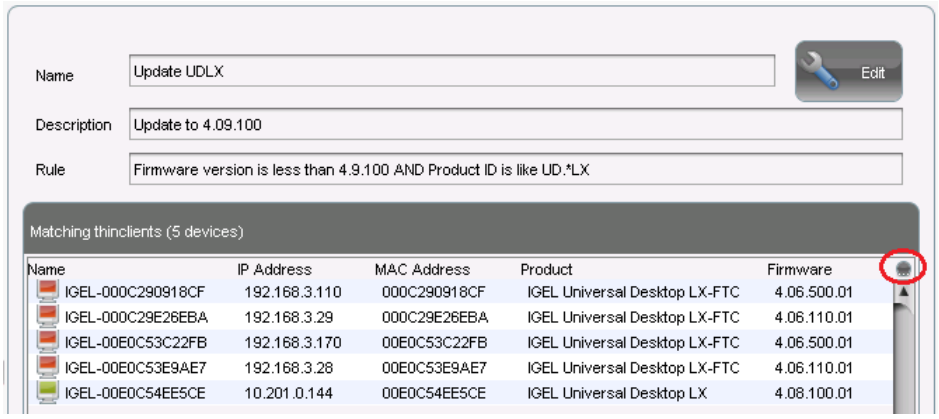


Figure 64: Matching thin clients

5. In the results view, we click **Edit** in order to configure the data shown.

   The **Edit View** window opens.

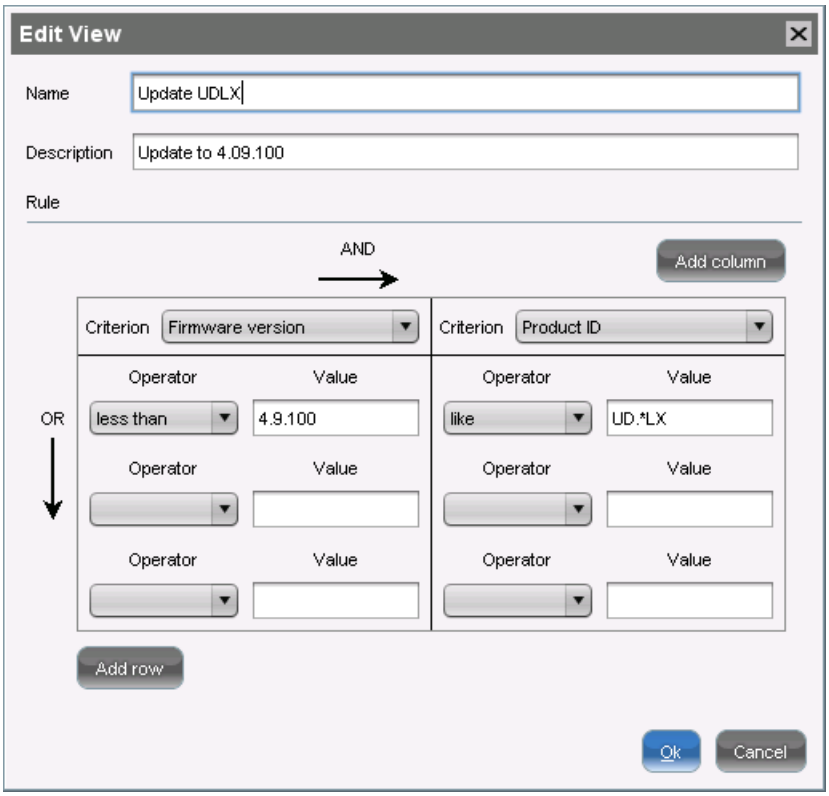


Figure 65: View expert mode

If you would like to enter a number of filter criteria, you can also switch to the expert mode at the start of the creation process. This view allows the quick logical linking (AND/OR) of several criteria and values.

7.2. Saving the view results list

➢ Select **Save Under**, e.g. in the context menu of a view, in order to save the current view results list in file form. Three file formats are available for export: XML, HTML and XSL-FO.

This is an example of an XML file for the above view:

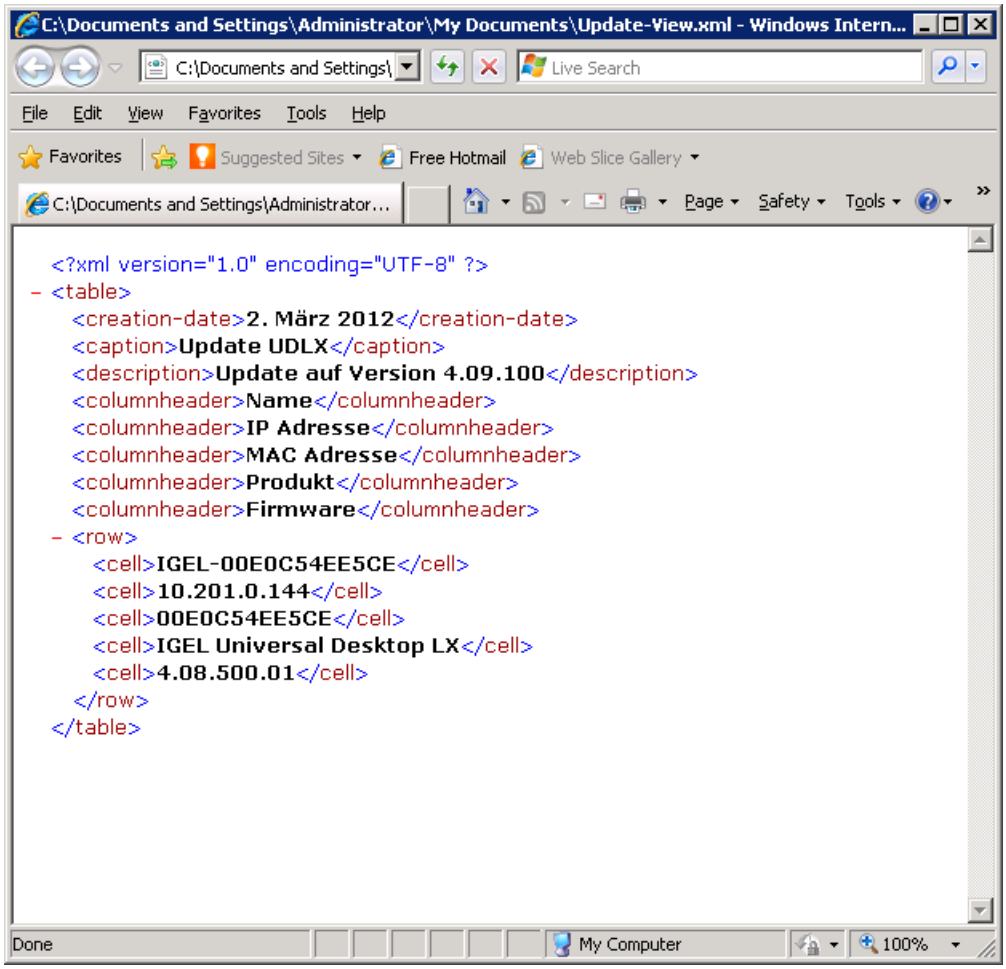


Figure 66: XML export of results

7.3. Sending a View via E–mail

E-mails can only be sent if you have made appropriate *mail settings* (page 123) under **UMS Administration→Global Configuration→Mail Settings**.

To send a view via e-mail, proceed as follows:

1. Right-click on a **view**.
2. Select **Send View Results via E-Mail...** in the context menu.
   The **Send View Results via E-Mail...** window opens.

3. Enter the recipient address in the **Mail Recipient** field. A number of recipient addresses can be entered, separate them with a ";" (semicolon).
4. Under **Result Format**, select the format in which the view is to be sent.
5. Check the **Create Archive** box to send the view as a zip file.

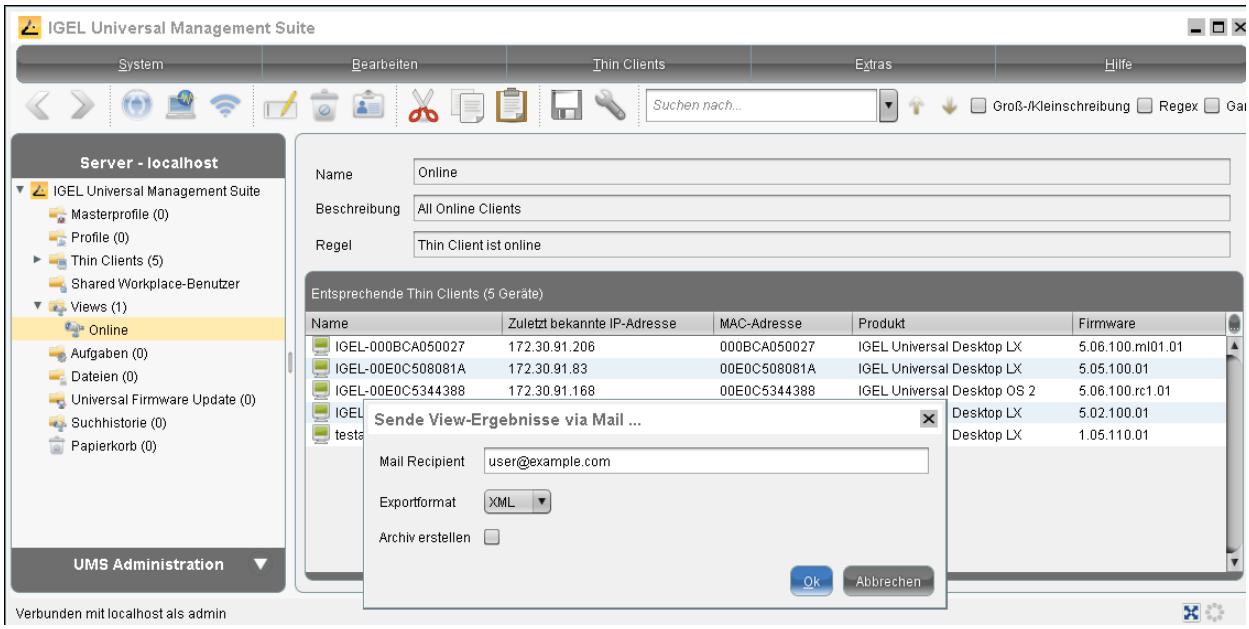


Figure 67: Sending view results via e-mail

You can also send views automatically and regularly as an *administrative task* (page 119).

8. Scheduled Jobs

The task planner serves to determine when specific thin client commands are executed. These tasks can be repeated at intervals or on specific days of the week.

To get an overview of all tasks defined and planned to date, proceed as follows:

➢ Select a folder from the **Jobs** sub-structure.

All scheduled jobs in the folder are shown on the right-hand side of the window with all important data such as the command to be executed, the date and the time of the next execution etc.

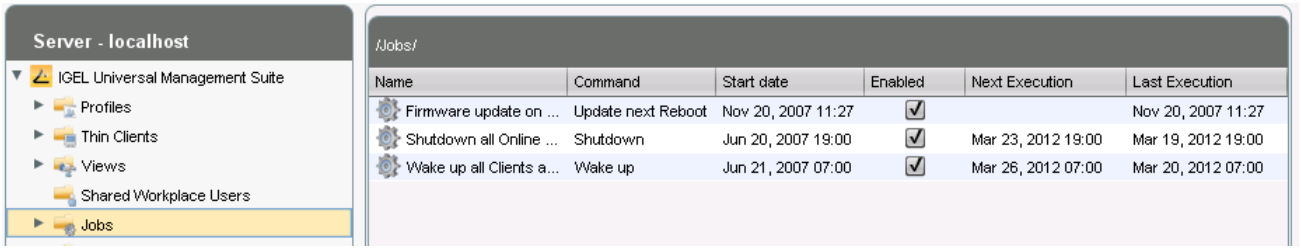


Figure 68: Scheduled jobs

Via the context menu, you can **edit**, **rename**, **delete** a task etc. and delete the previous results of task execution.

8.1. Setting up a new task

➢ Select **New Scheduled test jobJob** from the **Context** menu or **System**.

The configuration window contains three tabs:

- **Details**
- **Schedule**
- **Assignment**

8.2. Commands for Jobs

Command	Description
Update	Executes the firmware update with the existing settings (Linux)
Shutdown	Shuts down the thin client
Reboot	Reboots the thin client
Suspend	Puts the thin client into standby mode
Update next Reboot	Executes the firmware update when the thin client reboots (Linux)
Update on Shutdown	Executes the firmware update when the thin client shuts down (Linux)
Wake up	Boots the thin client via the network (Wake-on-LAN)
Settings TC -> UMS	Reads the local thin client configuration to the UMS
Settings UMS -> TC	Sends the configuration of the UMS to the thin client
Download Codecs	Loads codecs for the MPlayer (Linux, obsolete)
Remove Codecs	Removes codecs from the MPlayer (Linux, obsolete)
Download Flashplayer	Loads the Flash player plug-in for Firefox (Linux)
Remove Flashplayer	Deletes the Flash player plug-in for Firefox (Linux)
Download Firmware Snapshot	Executes the firmware update with the existing settings (WES)
Partial Update	Executes the partial update with the existing settings (WES)
Update Desktop Customization	Updates the set desktop background and the boot logo (Linux)

8.3. Details

Name	Name of the task
Command	Command which is executed for all assigned thin clients.
Start date/execution time	Time of first execution.
Active	Tasks can be enabled or skipped as necessary.
Comment	Further information regarding the task.
Back up results	Loggable results are collected in the database. This is not possible with the `Wake-on LAN` command.
Max. processes	Maximum number of processes executed simultaneously, these processes may thus be executed in block fashion.
Time-out	The maximum waiting time before the UMS sends the command to the next thin client.
Delay	The minimum waiting time before the UMS sends the command to the next thin client.
Retry when booting	Parameter for the update command - clients that are switched off perform the update when they next boot.
Job ID	Internal task number which cannot be changed. This field is empty if a task is new.
User	Name of the UMS user executing the command.

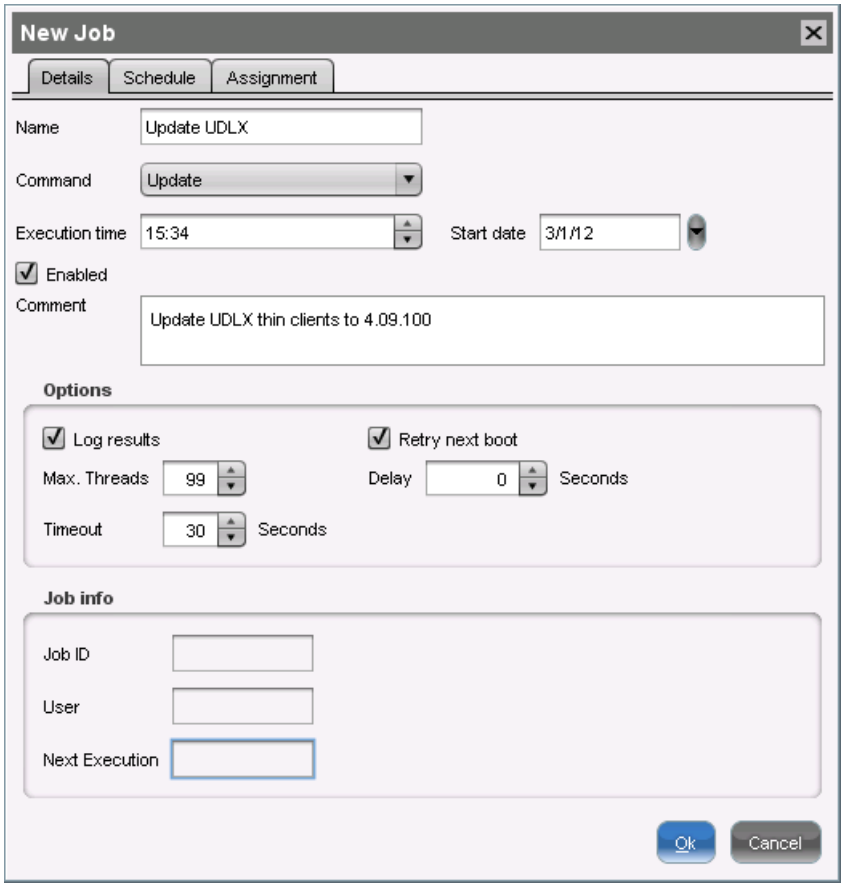


Figure 69: Job details

8.4. Schedule

Start date/execution time	Time of first execution.
Expiry data/time	After this point, no further commands will be executed.
Repeat job	A task can be repeated at fixed intervals or on specific days. Public holidays can be excluded separately. You can update the list of public holidays under **Misc→Planned Tasks→Public Holiday Lists**.
Abort execution	When tasks are executed repeatedly, incomplete tasks can be aborted. No further commands will then be sent to thin clients.

The **Max. processes, delay** and **time-out** options make sense for all commands which take a long time to execute or cause heavy network traffic, e.g. downloading a firmware update, codec or snapshot. To prevent a large number of thin clients downloading data from a file server at once, it is advisable to reduce the number of simultaneous threads (e.g. to 10) and to set up a delay (e.g. 1 minute).

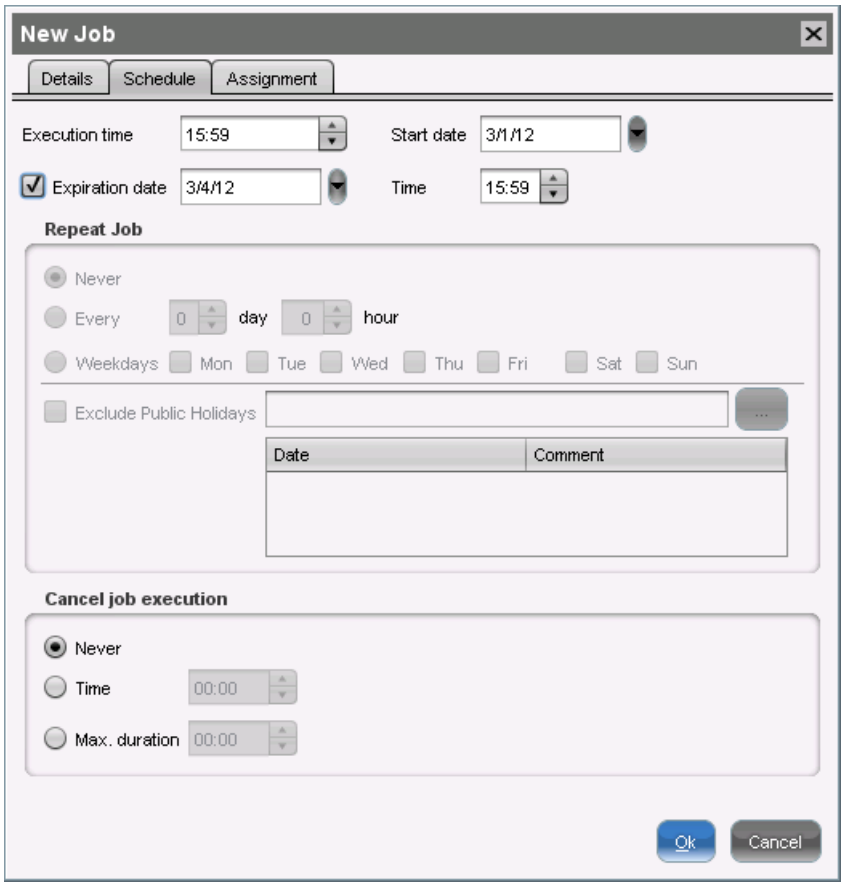


Figure 70: Job schedule

8.5. Assignment

By selecting **Add** (**+**), you can assign a task to specific thin clients.

You can also select a thin client directory. The task will then be assigned to all devices located in this directory at the point of execution.

The most flexible assignment can be achieved by selecting devices dynamically with the help of a selected view. At the point of execution, the devices will first be ascertained on the basis of the selection conditions for the view. The tasks will then be assigned to them.

Write authorization for the relevant objects is required in order to set up static thin client assignment via the MAC address or dynamic assignment via the directory or view. At the point of execution, the user who has set up the task must have write authorization for the relevant thin client. This must be taken into account, even if other users have write authorization for a task and especially if the database user has set up a task.

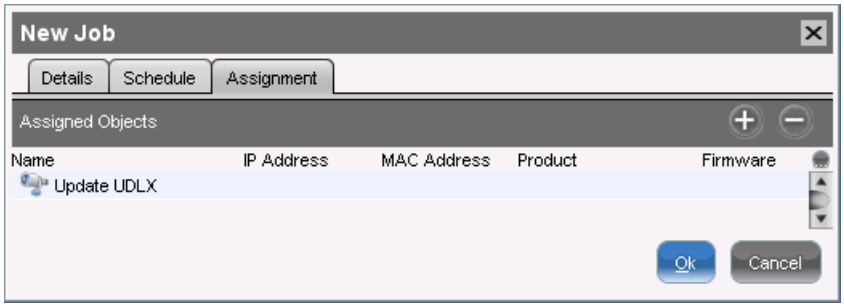


Figure 71: Job assignment by view

8.6. Results

A fourth tab appears in the view for a completed task: **Results** Here, you are given an overview of the status for the execution of a task. You can select items from the overview using a drop-down list. This results view can be deleted and updated using two buttons. The following status reports are issued by the task **message** system for the assigned thin clients:

Being executed	The task is currently being executed.
OK	The task is complete, all assigned thin clients have been dealt with.
Out of time	The task was aborted before all assigned thin clients could be dealt with because the abort time or the maximum duration has been reached.
Aborted	The task was stopped for an unknown reason (e.g. server failure).

Thin clients too are given a status for task execution:

Running	The command is currently being executed. The server is waiting for a reply.
Waiting	The task is running, the command will be executed when the next process is available.
Transferred	The command was successfully executed or transferred to the thin client.
Aborted	Aborted owing to an internal error or an unknown cause.
Failed	The command could not be executed, the reason is shown in the message column.
At next boot	The command will be executed when the device next boots.
Not done	The command was not executed because the time-out for the task was reached.

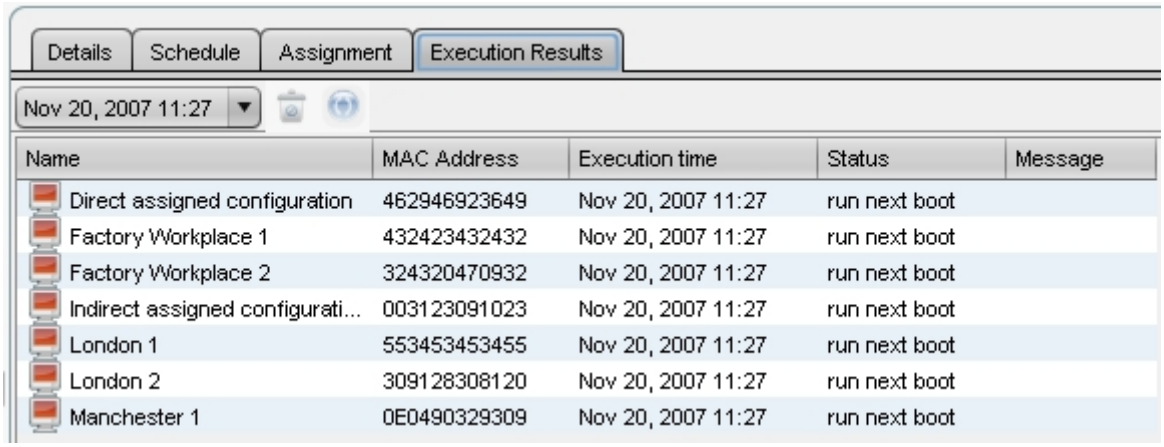


Figure 72: Job status list

9. Files

Through a **file transfer**, you can save files in the thin client's local file system. A file must be registered on a UMS Server before it can be sent to the thin client. Examples include virus scanner signatures required locally on the thin client, browser certificates, license information etc.

9.1. Registering a file on the UMS Server

A file must be registered on the UMS Server before it can be loaded onto a thin client.

To register a file on the UMS Server, proceed as follows:

1. Create a web resource, e.g. with the name `ums_filetransfer`, using the UMS Administrator.
2. In the UMS Console, select **System→New→New File** from the menu bar or go to **Files** in the tree structure and select **New File** from the context menu.
3. Under **File Origin**, specify the path of the previously created web resource for uploading to the UMS Server by selecting a local path or server path.
4. Under **Classification**, specify whether the file is to be saved with or without a browser certificate.
5. Under **Thin Client Storage Path**, specify the path in the client's local file system.
6. Allocate **access rights**.

   These will be attached to the file when it is transferred to the client and will be used on the destination system.
7. Confirm the settings by clicking on **OK**.

   The file will now be copied to the web resource and will be registered on the UMS Server.

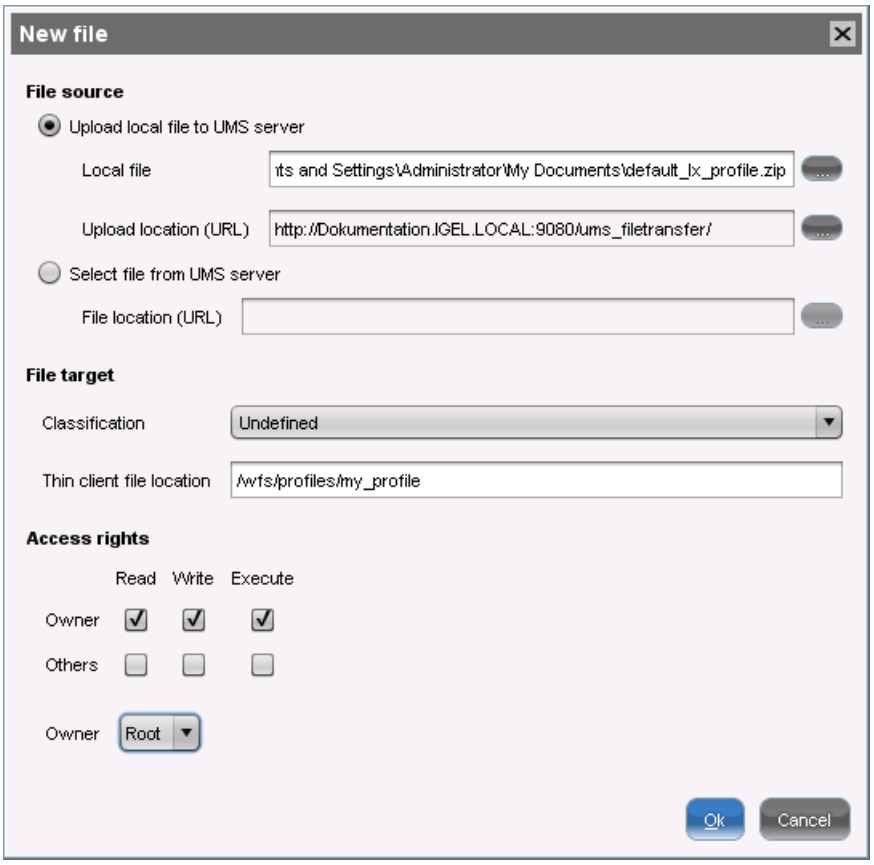


Figure 73: New file registration

9.2. Transferring a file to a thin client

In order to upload a file to a thin client, it must be assigned to the thin client either directly or indirectly via a thin client directory or profile.

- Using drag and drop, move the file to the thin client's directory

  or integrate the file directly into the thin client's **Assigned Objects** window using the **Add Symbol** in the same way as you would assign profiles.
  If a file has been assigned to a profile, it will be transferred to the assigned clients along with the profile settings.

When the UMS settings are transferred, a file assigned in this way will be copied to the thin client, e.g. while the thin client is booting. As long as the file is assigned to the thin client, it will be synchronized with the file registered on the UMS Server, for example if the file `bookmarks.html` is replaced by a new version. The MD5 checksum for the file assigned to the thin client is compared to the registered file. If the checksums differ from each other, the file will be transferred again.

The thin client must be able to contact the UMS Server with its full qualified domain name, e.g. `mytcserver.mydomain.tld`.

If a file was directly replaced on the file system (web resource), it must be updated in the UMS Console using the command **Update File Version** from the file's context menu. The UMS Server will otherwise not recognize the change in the file version.

9.2.1. Transferring a file without assignment

A file registered on the UMS Server can also be transferred to the thin client without preparation. To do this, use the command **Transfer File to the Thin Client** from the thin client's context menu or the thin client menu in the menu bar. The file does not need to be assigned to the thin client.

This is a straightforward file copying operation. The file is not updated if the file version on the UMS Server changes.

9.3. Removing a file from a thin client

To remove a file from a thin client, proceed as follows:

- Delete the file assignment

  or

- remove the file directly with the help of the command **Delete File from TC** from the thin client's context menu.

If you delete a file from the tree structure, this file will be removed from all devices to which it was assigned.

9.4. Transferring a file to the UMS Server

To download a file on a thin client to the web resources, proceed as follows:

- Click **Files→File TC→UMS** in the context menu of a thin client.

  The UMS cannot search through the thin client's local file system. You therefore have to know the location and name of the file you would like to download to the web resource.

> A file transferred from a thin client to WebDAV is not automatically registered on the UMS Server. It can then be found in the UMS' http server area. However, you can register files later on via **New File**.

To read out the current local configuration of the thin client, you will need to copy the two local files `setup.ini` and `group.ini` via the IGEL Universal Management Suite.

1. Select **Files→ File TC→UMS** from the thin client's context menu in the UMS Console. Specify `/wfs/<file name>` as the source (thin client save path).
2. Select the destination on the UMS server, e.g. `http://umsserver.domain:9080/ums_filetransfer/<filename>`.
3. Begin the file transfer by selecting **File TC→UMS**.

10. Universal Firmware Update

Firmware updates for all IGEL thin clients and Universal Desktop OS (Universal Firmware Converter UDC) are available on the public IGEL server `http://myigel.biz`. Within the UMS, you can check for newly available updates, download them and easily distribute them to thin clients.

10.1. Changing server settings

IGEL's public update server is pre-configured. If you would like to use your own FTP server for distributing updates, you can change the server settings accordingly:

1. In the **Administration** area of the UMS Console, switch to **Global Configuration→Universal Firmware Update**.
2. Click **Edit**.

   The Edit FTP Server Configuration window will open.

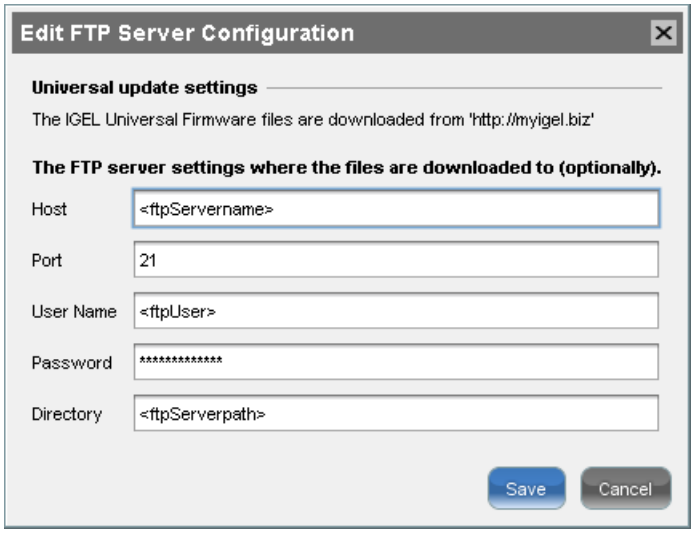


Figure 74: IGEL Universal Firmware update

3. Change the settings for your server.
4. Click **Test Server Connection** in order to check communication with the IGEL Server and, optionally, with your own FTP server.

Problem

You want to use a proxy server to access the IGEL update server via HTTP.

Solution

Configure the proxy settings for Universal Firmware Update:

1. Start the UMS console.
2. Go to **Administration→Gobal Configuration→Universal Firmware Update**.

3. Click **Edit Proxy Configuration.**
4. Enable the HTTP proxy and define a connection.

Click **Save** to activate your changes.

10.2. Searching for and downloading updates

To search the public IGEL server for updates, proceed as follows:

1. In the console navigation tree, right-click **Universal Firmware Updates**.
2. Select **Search for New Updates** from the context menu.

   A window containing a list of all updates which match the firmware versions registered in the UMS Database will open.

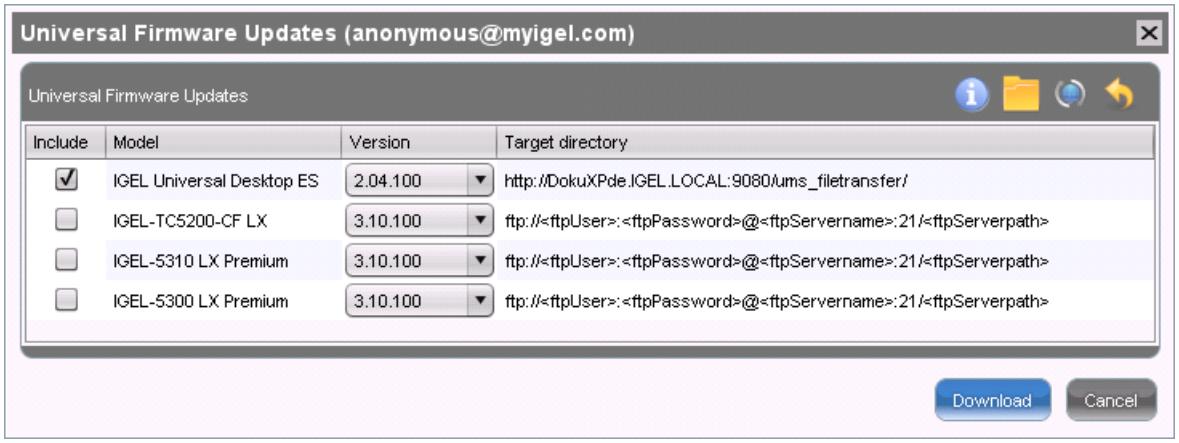


Figure 75: Available updates on server

3. Click **Information** in order to view the release notes for each update.
4. Check the **Include** checkbox to download the relevant firmware.

   The update will be added to the navigation tree and the current processing status will be shown.

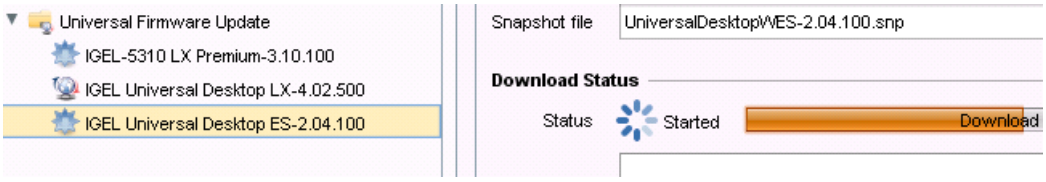


Figure 76: Status of firmware download

10.3. Importing from a local source

You can also load updates from a local source, e.g. from a USB stick.

An item of firmware from a local source does not have the metainformation stored on the IGEL Server.

1. Select **Firmware Archive** from the firmware updates context menu.
2. Select a compressed Linux update (`ZIP` file) or a Windows snapshot (`SNP`) file.
3. Specify a directory for storing the update before it is distributed to thin clients later on.
4. Click **OK** to start the import.

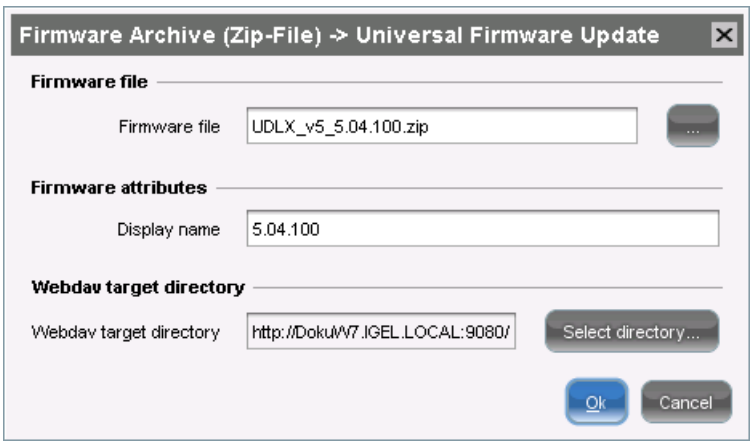


Figure 77: Import from ZIP or SNP file

10.4. Importing from the UMS WebDAV

You can also register as a Universal Firmware Update a snapshot of a Windows Embedded Standard thin client that was created earlier and stored in a web resource:

1. Select **Snapshot** from the **Universal Firmware Updates** context menu.
2. Specify the update to be imported.

10.5. Assigning an Update to a Thin Client

To assign a registered firmware update to a thin client, proceed as follows:

Directly: by drag and drop
via **Assigned Objects** in the thin client window

Indirectly: via a directory

➢ Launch the update process after transferring the information to the thin client manually or as a **Planned Task**.

As a result of the assignment, a "hidden" profile with the necessary update information will be generated. The thin client can then perform its update on the basis of this information. You can tell that a Universal Firmware Update has been assigned to a thin client by the fact that the configuration previously or already defined was changed, the automatically generated update profile has precedence over the thin client's other profiles.

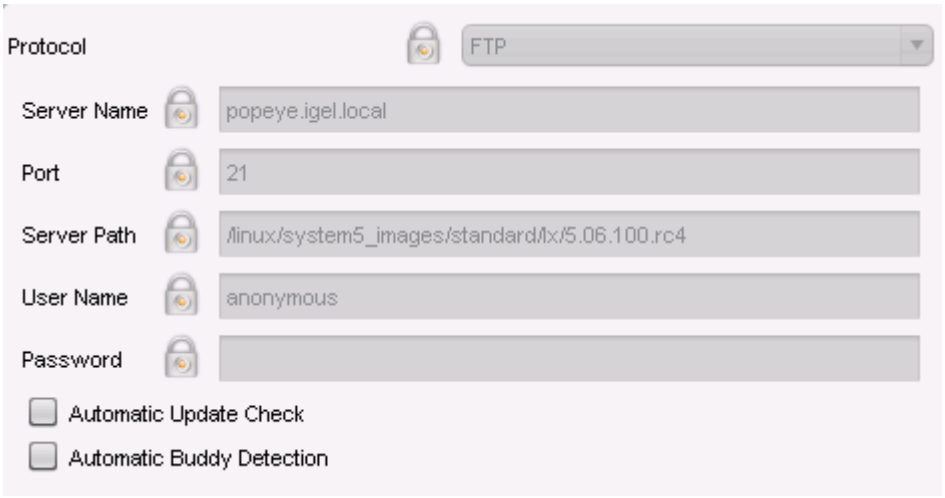


Figure 78: Auto-created update profile

Assigning an update still does not start the update process. The information needed for the update is merely transferred to the thin client.

11. Managing certificates

Manage your UMS certificates for server, client and console application.

11.1. Installing Server Certificates

The IGEL UMS saves a certificate on each thin client it controls. This certificate prevents unauthorized access to the thin client configuration. During the installation, a distinct pair of keys (one public and one private) is generated for each IGEL UMS Server. When registering a thin client in the UMS, the public part is automatically transferred to the thin client and saved there. From this point onwards, a comparison with the server's private key will be made each time that the thin client is accessed. If other IGEL UMS installations try to access the thin client, access will be denied.

> You can also upload a certificate of your own to the UMS, for more information read the instructions in *UMS Network* (page 116).

11.2. Removing a Certificate

UMS also allows you to remove the certificate from thin clients. This may be necessary

- in order to prepare for moving a thin client from the test environment to the productive environment
- in order to prepare for replacing the server certificate.

To remove the certificate, proceed as follows:

➢ Select **Remove UMS Certificate** under **Thin Clients→Commands→Other Thin Client commands**.

Each IGEL UMS Server can now access the thin client configuration until one of the servers registers the client.

11.3. Saving a certificate

You can also save the certificate on a thin client which is already registered in the database. This can be particularly helpful if the certificate has been deleted from the thin client manually.

To save a certificate on a thin client, proceed as follows:

1. Select a group or an individual thin client.
2. Select **Save Certificate** under **Thin Clients→Commands→Other**.

As an alternative, you can also re-register the thin client.

11.4. Importing a console certificate

If you install the IGEL UMS Console on another computer, you will need to import the `<INSTALLDIR>\rmclient\cacherts` certificate.

- Copy this file onto a diskette

  or

- Save this file in an approved folder which can be accessed from the destination computer.

12. Administration area

The UMS Administration area brings together a number of configuration options which, in the past, were only available via the UMS Administrator on the UMS Server itself. These include linking **Active Directories** and setting up **Universal Firmware Updates**.

New tools such as **Administrative Tasks** or the **Server Services Status View** are also available here.

12.1. UMS network

The **UMS Network** node shows information regarding the SSL certificate currently used.

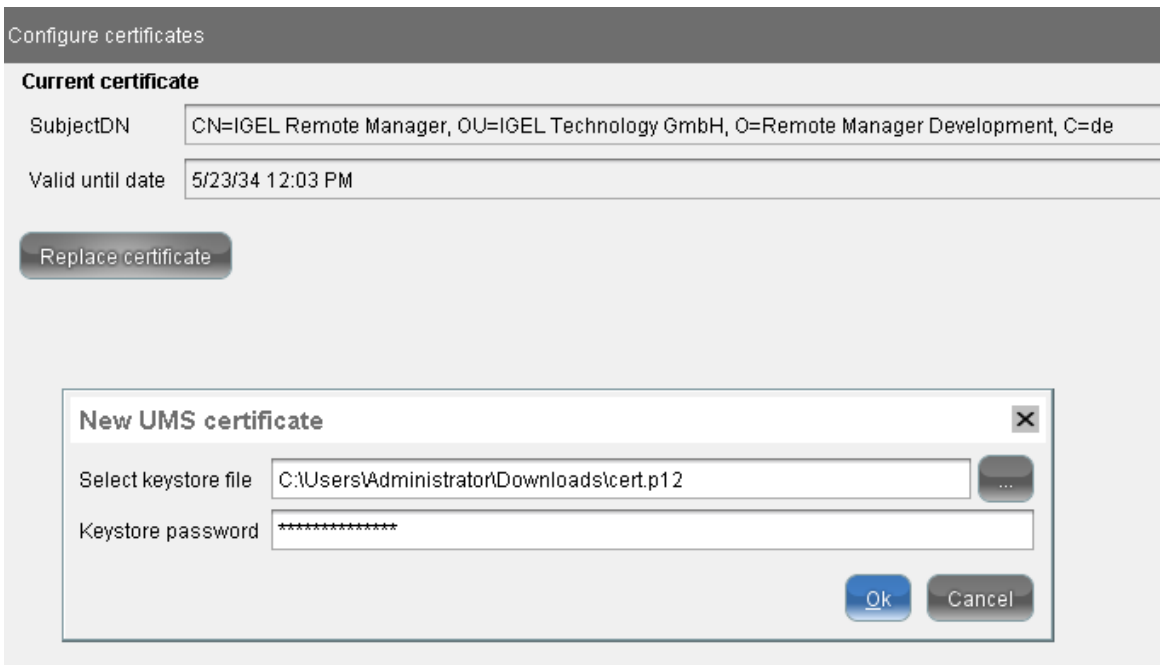
You can also replace the certificate (self-signed) which is generated during installation with your own SSL certificate here. This must be in the PKCS 12 format.

> If you replace certificates, do this before registering thin clients on the UMS. Otherwise, you will need to *remove the old certificates from the thin clients* (page 114) manually after changing the certificate.

To install your own SSL certificate, proceed as follows:

1. Click on the **Replace Certificate** button.
2. Select your certificate file under **Select Keystore File**.
3. In the **Keystore Password** field, enter the password for your certificate file.
4. Confirm your settings by clicking on **OK**.

The UMS Console will then prompt you to restart the UMS Server in order to complete installation of the certificate.



12.2. UMS Server

The Server sub-node lists all servers and Load Balancers belonging to the UMS installation.

With a standard installation, only one available server normally appears here – in a HA network, all installed servers and Load Balancers are shown.

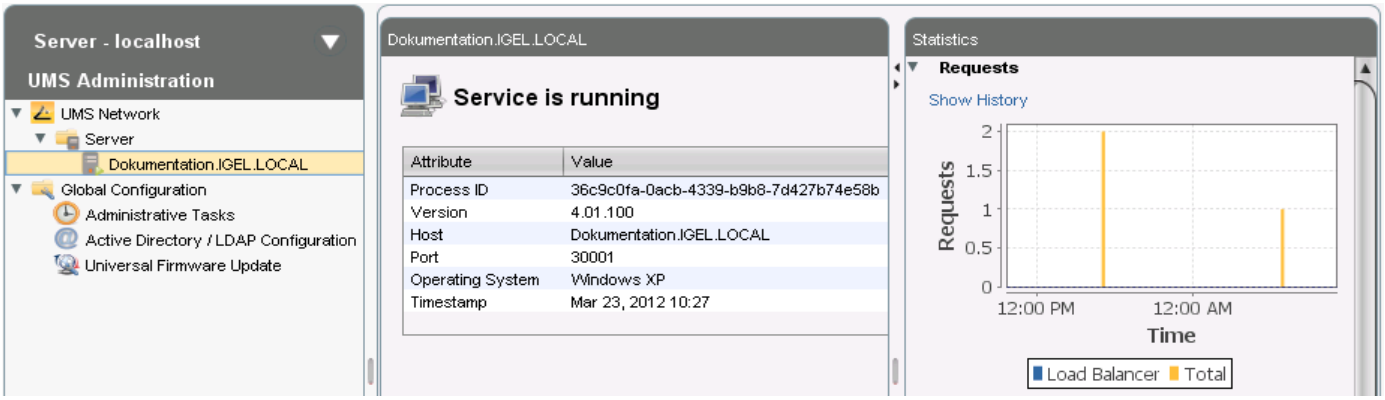


Figure 79: Status of UMS server

An overview of queries as well as queries that are waiting or have been rejected by thin clients makes it possible to estimate the server load across the relevant time period.

➢ Click Show History to bring up a scalable view. You can use the mouse to zoom in on sections or restore the view by pressing the mouse button and moving the mouse to the left.

12.3. Global configuration

Under Global Configuration, you can regulate *Administrative Tasks* (page 117), integrate user data from the *Active Directory* (page 121), set up *Universal Firmware Updates* (page 121) and manage *licenses* (page 121).

12.3.1. Creating administrative tasks

Administrative tasks allow you to create backups (internal Embedded DB only) and clean the database (remove unused firmware, clear the cache, delete logging information and other) on a scheduled, recurrent basis.

To create a new administrative task, proceed as follows:

1. Set up a new administrative task by clicking on Add (+).
2. Give the task a name.
3. Under Action, select the type of task (backup or remove firmware).
4. If necessary, add a more detailed description.

In this first view, tasks can also be disabled and only enabled later on.

Creating a planned backup (Embedded DB)

To create a planned backup, proceed as follows:

1. Specify the **directory** on the server in which the backup (`.embak`) created is to be stored.
2. Click **Continue**.
3. Assign the task to a **server**.

   > When the Embedded DB is used, there can only be one connected server. The task must therefore be assigned to a single server on a fixed basis.

4. Click **Continue**.
5. Set the time when the task is to be executed for the first time and, if necessary, the interval at which it is to be **repeated**, e.g. every week on Sunday.

   As with **planned tasks**, public holidays can be excluded.
6. Click **Finished** to complete the configuration of the task.

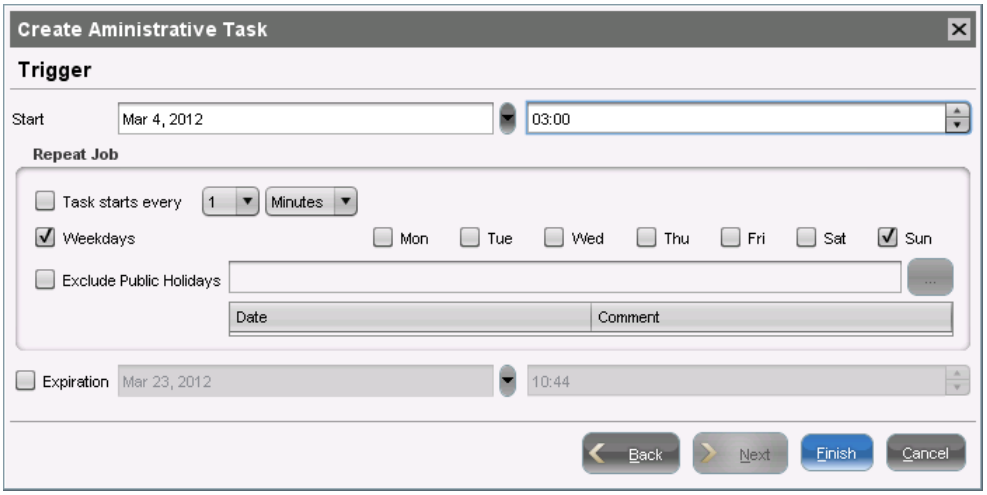


Figure 80: Execution time of task

Remove Unused Firmware

To delete unused firmware versions from the database on a regular basis, proceed as follows:

1. Select this **action** for a **new administrative task**.
2. Click **Continue**.
3. Assign the task to a **server**.

   > In the UMS HA network, only one server can execute a task in each case.

4. Click **Continue**.
5. Set the time when the task is to be executed for the first time and, if necessary, the interval at which it is to be **repeated**, e.g. every week on Sunday.

   As with **planned tasks**, public holidays can be excluded.

6. Click **Finished** to complete the configuration of the task.

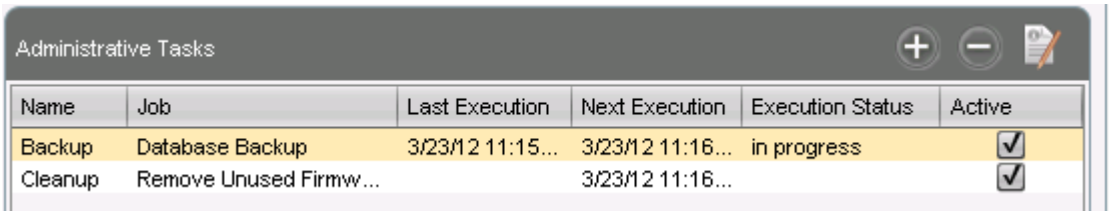


Figure 81: Task status

Refresh Caches

This task refreshes the UMS Server cache at a defined point in time or on a regular basis. You can configure the cache itself under **Global Configuration→Cache Configuration**.

Delet Logging Data

Deletes the previously created UMS message and event log. For this task, you can specify a target directory in which the logging data will be backed up before the log is deleted from the UMS Server.

The logs for *Secure Shadowing* (page 54) are not deleted as a result of this administrative task.

Delete Thin Clients

This task deletes at the requested point in time all thin clients from the UMS Database which, when running, meet the criteria of a view (e.g. "all thin clients which were not booted for more than a year").

Exporting view results via e-mail

E-mails can only be sent if you have made appropriate *mail settings* (page 123) under **UMS Administration→Configuration→Mail Settings**.

To set up the regular sending of a view via e-mail, proceed as follows:

1. Select **Export View Results via E-Mail** in the **Create a New Administrative Task** window.

2. Select a view via the **View-ID→[...]** button.
3. Select the desired data fields under **Visible Columns Configuration→[...]**.

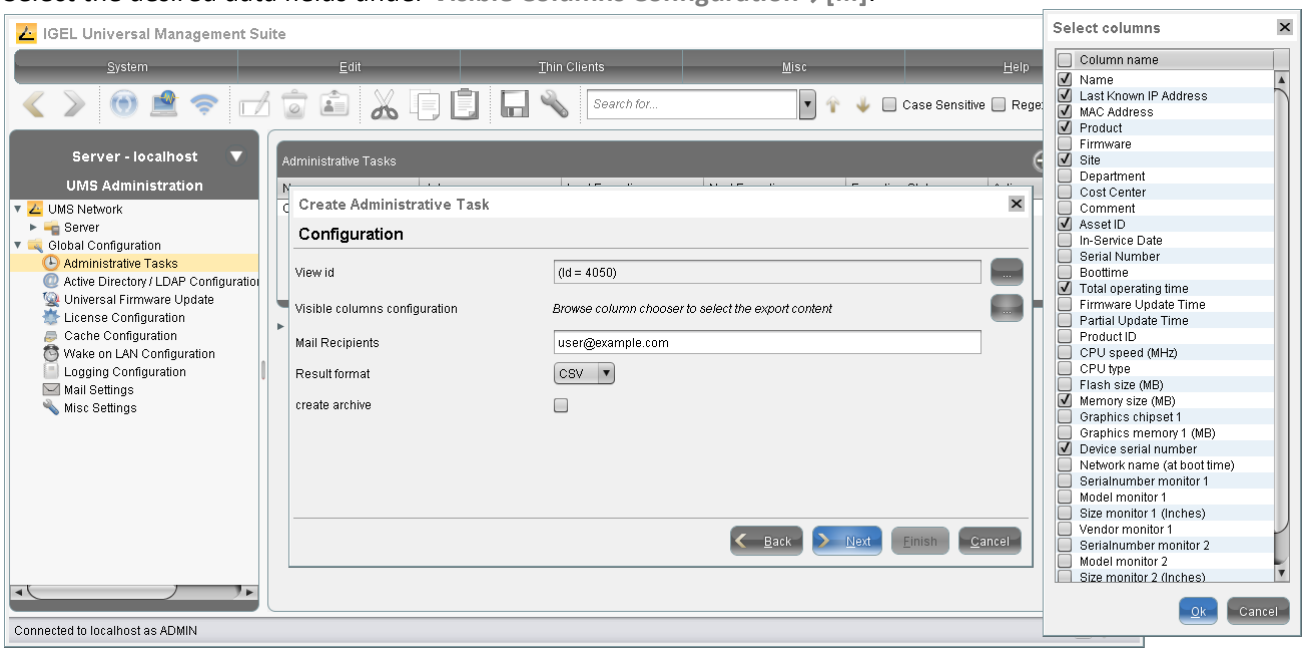


Figure 82: Selecting a view and columns

4. Enter the recipient address. A number of recipient addresses can be entered, separate them with a ";" (semicolon).
5. Select the **Result format** and whether the file is to be zipped.
6. In the next window, set the **start** and **end**, the frequency and the **Weekdays** on which the task is to be executed. You can exclude individual public holidays.

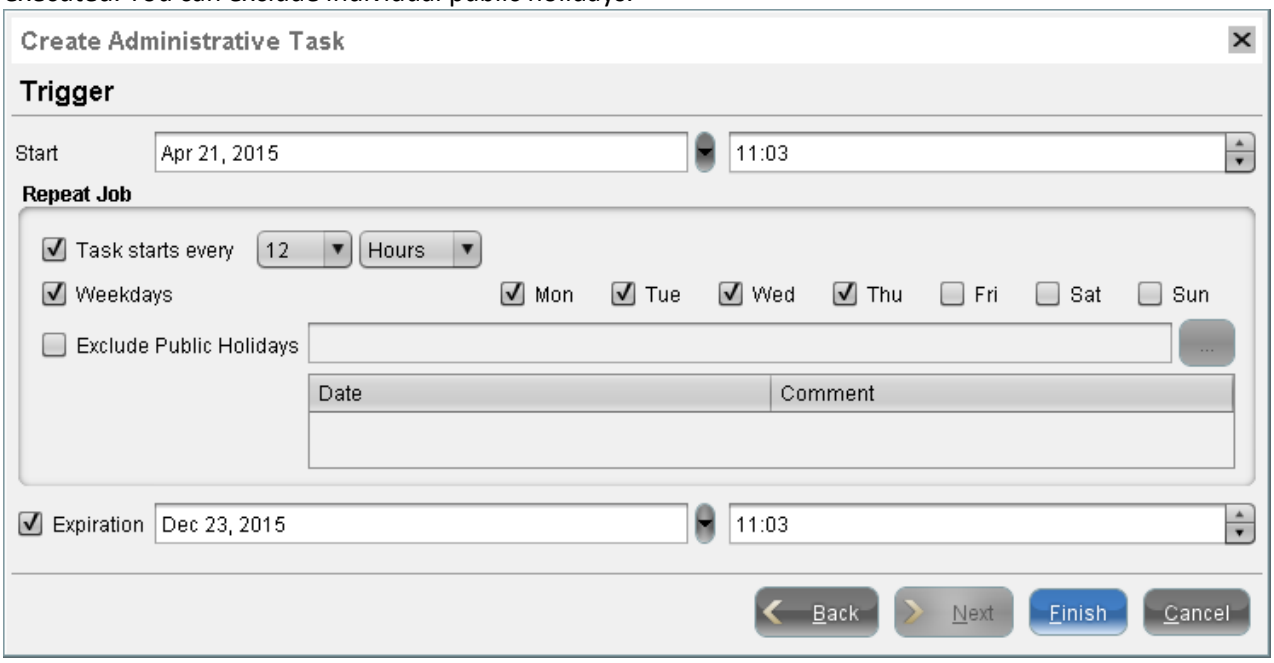


Figure 83: Setting execution time

7. Click on the **Finish** button when you have entered all the information.

12.3.2. Linking an Active Directory / LDAP

It can make sense to link the UMS Server to an existing Active Directory for two reasons:

- You would like to import users from the AD as UMS administrator accounts.
- You would like to use user profiles via IGEL Shared Workplace.

For both purposes, you first need to link the relevant Active Directories in the administration area under **Global Configuration→Active Directory / LDAP Configuration**.

1. Add a new entry to the list of linked Active Directories by selecting **Add (+)**.
2. Specify the name of the **domain**, the **domain controller** and the **page size**.

   The page size limits the number of hits (i.e. objects) in the Active Directory on the server side. The standard value is `1,000`. Change this value according to your server configuration.
3. Click **Test Connection** to test the connection after entering valid user data.

> A number of Active Directories can be linked. You should therefore ensure that you give the correct domain when logging in (e.g. to the UMS Console).

In this document, the terms Active Directory and LDAP are, to an extent, used interchangeably:

- Administrative users / UMS administrators can be imported both from an AD and from an LDAP.
- Shared Workplace users can authenticate themselves only vis-à-vis an Active Directory. An LDAP service cannot be used for this purpose.

12.3.3. Universal Firmware Update

The setup procedure is described in the chapter *Universal Firmware Update* (page 110).

12.3.4. License configuration

In this area, you are given an overview of the availability and status of all licenses and a list of registration data.

12.3.5. Cache

The cache is integrated into the UMS GUI Server and is configured from the UMS Administrator. It is designed to improve overall performance when the thin client retrieves its settings. Furthermore, the UMS can provide the thin client settings even if the UMS Database is not running. Please bear in mind, however, that you cannot change thin client settings if the database is not enabled.

Enable cache	Enable or disable cache
Delete stray files	Deletes entries in the cache that cannot be found in the database.
Add all thin clients	When the cache is updated, you can add to it the settings for all thin clients which are known to the UMS. Otherwise, only the settings of the thin clients which have connected at least once to the UMS of the current host will be added.
Update cache when the server is launched	The cache is updated when the server is launched. To make detailed changes to the update settings, go into the **UMS Console** and click **Administrative Tasks** in the **UMS Administration**.

➢ Select **Misc→Manage Cache** in the UMS Console menu.

Various details about the cache are shown in the dialog window. These include which entries can be found in the cache, when the next update will take place etc.

A number of cache actions can also be performed here:

Update cache	Updates all cache contents immediately
Empty cache	Removes all cache entries immediately
Update view	Provides an updated view of the cache information

The Administration area of the UMS Console also allows you to set up an **administrative task** in order to update the cache automatically on a regular basis.

12.3.6. Wake-on-LAN

Thin clients can be wakened via the network using magic packets. In the UMS Administrator, you can specify the addresses to which these packets are sent. By default, they are sent as a broadcast and to the last known IP of the thin client.

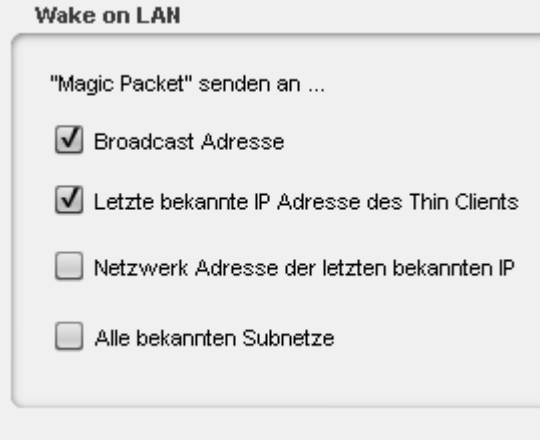

Wake on LAN
"Magic Packet" senden an ...
Broadcast Adresse
Letzte bekannte IP Adresse des Thin Clients
Netzwerk Adresse der letzten bekannten IP
Alle bekannten Subnetze

Figure 84: Wake-on-LAN settings

12.3.7. Logging

You can set up logs relating to two different areas:

Message log settings:	Logging for actions prompted by the user
Event log settings:	Logging for actions prompted by the thin client

Each log type – independently of one another – can be:

- enabled or disabled,
- saved for a limited time, for a limited number of entries or indefinitely,
- set up and the actions which are to be registered controlled.

Some tips when working with logs:

➢ You can register detailed information along with messages.

➢ You can also record the name of the UMS administrator who performed the particular action.

➢ You can enable or disable actions that are to be logged in the log level configuration.

By default, all actions are recorded when the logging function is enabled.

➢ Click **System→Logging** to bring up the current log and the exported information in the UMS Console.

The log information can be manually exported there too.

The Administration area of the UMS Console also allows you to set up an **administrative task** in order to backup and delete the logs automatically on a regular basis.

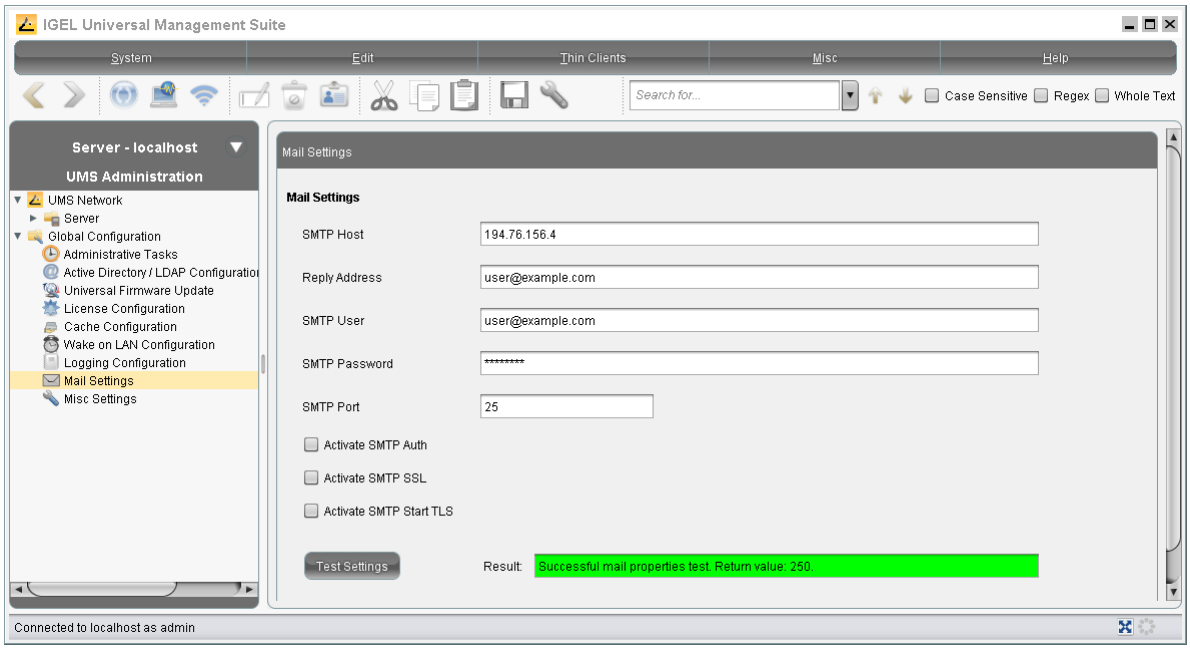
12.3.8. E-mail settings

The e-mail settings described here must be made in order to use the *Send View via E-Mail* (page 98) and *Export the View Results via E-Mail* (page 119) functions.

1. Open the **UMS Administration→Global Configuration→E-Mail Settings** page.
2. In the **SMTP Host** field, enter the name known in the DNS or the IP address of the SMTP server (outgoing mail server).
3. In the **E-Mail Sender Address** field, enter the desired sender of the e-mails.
4. In the **SMTP User Name** field, specify with which user name the IGEL Universal Management Suite is to log on to the SMTP server.
5. In the **SMTP Password** field, enter the password for the SMTP user.
6. In **SMTP Port**, specify to which server port the IGEL Universal Management Suite is to connect. For unencrypted SMTP, the port is 25. If SMTP-SSL is used, the port is 465.

7. Select **Enable SMTP Authentication, Enable SMTP-SSL** or **Enable SMTP-STARTTLS** if the SMTP server uses one of these options. You can find out which methods are supported in the documentation from your e-mail provider. If you would like to use a Gmail account, read the **Mail Settings for Gmail Accounts Best Practice document.**
8. Check your settings by clicking on the **Test Settings** button. If the test is successful, the results bar will turn green. If not, it will turn red.

Figure 85: E-mail settings



You will find the settings for sending e-mails via Gmail (Google Mail) in a *Best Practice document* (*http://edocs.igel.com/index.htm#10202904.htm*).

12.3.9. Misc settings

Further global parameters can be found here:

- **Activate recycle bin**: Enables the UMS *recycle bin* (page 37).
- **Activate Global Secure VNC:** Allows *Secure Shadowing* (page 54) only for all thin clients that support it.
- **Log user for secure VNC**: Adds the user name to the *Secure Shadowing* (page 54) log.
- **Enable template profiles:** Enables support for *template profiles* (page 81).
- **Enable master profiles:** Allows the use of *master profiles* (page 76).

13. Importing Active Directory users

Users can be imported from the Active Directory to the UMS Console in three steps:

- Logging in to the Active Directory
- Selecting the users to be imported and starting the import
- Logging the import process

To import users from the Active Directory to the UMS Console, proceed as follows:

1. Launch the UMS Console's import dialog via **System→Administrator Accounts→Import**.
2. Log in to the AD/LDAP service.

   The connection is described *above* (page 121). When importing user accounts, only connected ADs are available for selection.

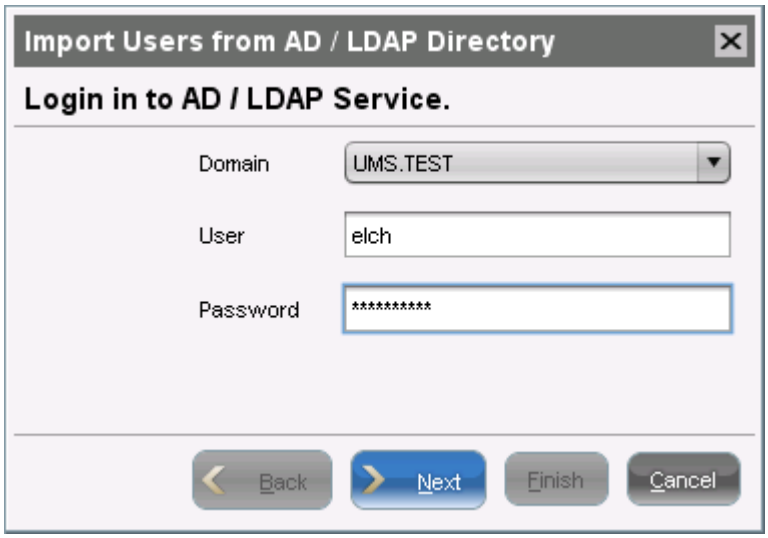


Figure 86: Login to Active Directory

3. Click **Continue**.

   The Active Directory browser will open.
4. Select individual users or groups from the structure tree of your AD.

   The highlighted users/groups can be added to or removed from the selection to be imported via the context menu or using drag and drop. The users/groups found in the **Found AD Accounts** hit list can be transferred to the **Selected Accounts** list using the symbols.

Multiple users and groups can be selected.

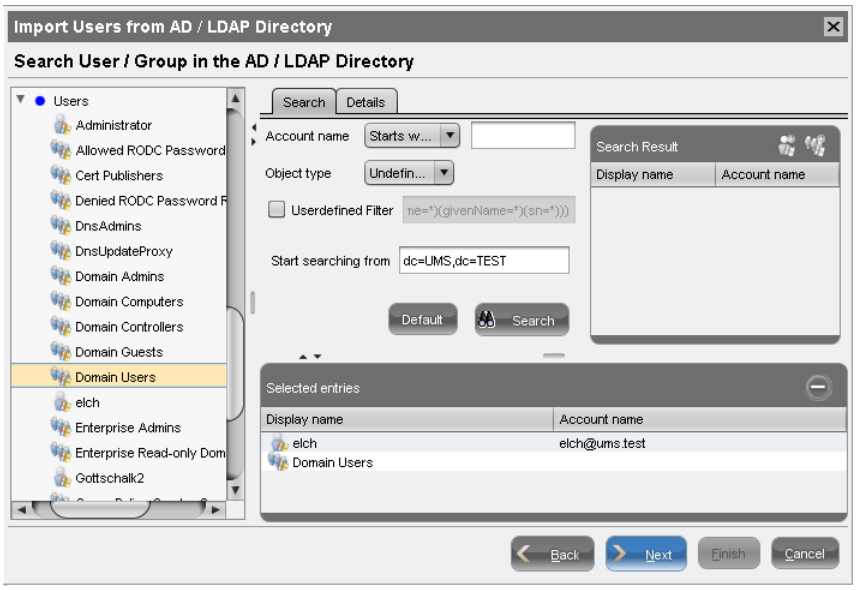


Figure 87: AD Import Filter

As an alternative to navigating in the structure tree, you can also highlight and add users or groups to the selection via the **Search** function.

5. Click **Continue** to start the import.

   A confirmation window will appear.

Once a user has been successfully imported, this action cannot be undone. A UMS administrator set up by mistake must be deleted manually via the administrator account management system. The IGEL UMS uses the **account** as the name of the AD user imported.

13.1. Explanation of symbols

The symbols in the AD structure tree have the following meanings:

- User account in the Active Directory
- User group in the Active Directory
- User account added to the selection
- User group added to the selection
- Computer in the Active Directory
- Organizational unit (OU) in the Active Directory
- Any object which is not a user or a group

The context menu allows the following actions to be performed on tree elements:

Adds a user (or group member) to the selection

Adds a user group to the selection

Sets an element as a starting point for searching in the AD

Shows the properties (details) of the element

Some tips:

- By holding down the Ctrl key when dragging and dropping a group, the group members and not the group itself will be selected.
- If an organizational unit is selected, only the members will be added, not the OU itself.
- The Ins and Del keys can be used to add and remove elements from the selection.
- If a user is both an administrator and a group member in the UMS, the user's own authorizations will take precedence.

13.2. Searching in the Active Directory

The options in the AD structure tree have the following meanings:

Account	Allows you to search on the basis of account names of parts thereof
Object type	Allows you to restrict a search to users or groups
Filter	Filter criteria in accordance with the RFC-2254 standard
Starting point	Element within the tree where the search begins
Reset	Resets all search options to the standard values
Search	Starts the specified search

The context menu allows the following actions to be performed on items in the list of hits:

Adds a user (or group member) to the selection

Adds a user group to the selection

Shows the properties of the element

Shows a tool tip (object properties with a mouse-over)

Via the context menu, you can once again bring up the properties of the objects selected for import and remove objects prior to the import if necessary.

13.3. Import results list

Once the import is complete, a results window will appear.

This shows how many accounts were ignored during the import and which ones were imported successfully. If a user account already exists in the UMS, this AD account will be skipped during the import.

Figure 88: Result of Import

14. Administrator accounts and access rights

For the purpose of logging in to the UMS Console, you can either import UMS administrator accounts from a linked Active Directory or create, organize and remove accounts manually.

Access rights to objects or actions within the IGEL UMS are attached to these administrator accounts and groups. The rights of database users who were created during the installation or when setting up the data source cannot be restricted. They always have full access rights in the UMS.

14.1. Administrators and groups

➢ Click **System→Administrator Accounts** to manage the IGEL UMS administrator accounts.

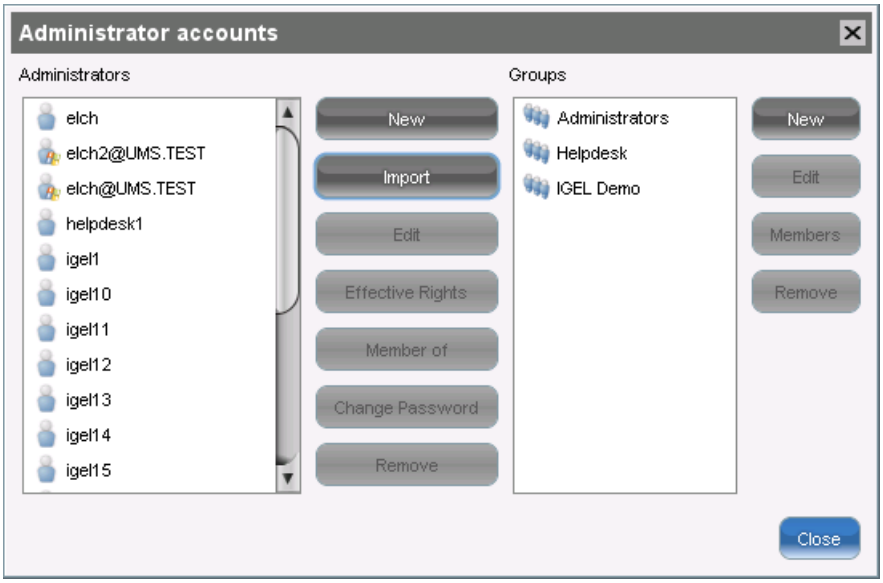


Figure 89: IGEL UMS Administrator Accounts

All available accounts are listed in the left-hand column, while the available groups are listed in the right-hand column. To the right of each column you will find the associated buttons such as **New**, **Edit** and **Remove**. For administrator accounts, you can also **change the password** and show group memberships. Details of the **members** who make up a selected group can also be shown. **Effective Rights** provides an insight into the rights that were directly or indirectly granted to a user or taken away from them.

14.2. Access rights

Authorizations in the IGEL UMS include:

- General rights which can be granted to an administrator or denied either directly via the account or indirectly on the basis of group membership,
- Access rights to objects in the navigation tree,
- Actions within the UMS Console.

The indirect rights given to an administrator on the basis of their group membership can be changed further for each administrator in the group. In this case, rights that were granted directly have precedence over those granted indirectly.

An administrator can be a member of several groups and receive the corresponding rights. If authorizations contradict each other, the withdrawal of an authorization takes precedence over the granting of it. If a prohibition regarding an action or object from a group is issued, it will overrule all rights from other groups.

Generally speaking, the same authorization settings are used for groups and administrators. The following description of individual configuration options for administrators therefore applies equally to groups too.

14.2.1. Basic authorizations

The following table lists the basic access rights needed to set up, edit or delete objects. An object can be a directory, an element in a tree structure (thin clients, profiles...) or nodes in the administration area of the console, e.g. administrative tasks or the AD connection.

Action	Objects affected	Browse	Read	Move	Edit Configuration	Write	Access control
General							
View Object	Tree Element (Profile, TC...)		X				
	Directory	X					
Create Object	Target Directory					X	
Delete Object	Object					X	
	Source Directory					X	
Edit Object	Object					X	
Rename Object	Object					X	
Show Configuration	Thin Client, Profile		X				
Edit Configuration	Thin Client				X		
	Profile					X	
Show Effective Rights	Object		X				
	Directory	X					
Edit Object Permissions	Object, Directory						X
Import	Target Directory					X	

Figure 90: Basic access rights

Example 1:

In order to be able to change the configuration of a thin client, a user requires authorization to **search** the thin client's directory path and **configure** the thin client itself.

Example 2:

In order to be able to configure a scheduled backup of the internal database, an administrative user requires **search**, **Global Configuration** and **write** authorization for administrative tasks (reading authorization is automatically set at the same time).

14.2.2. General administrator rights

The general administrator rights essentially relate to actions in the menu of the console:

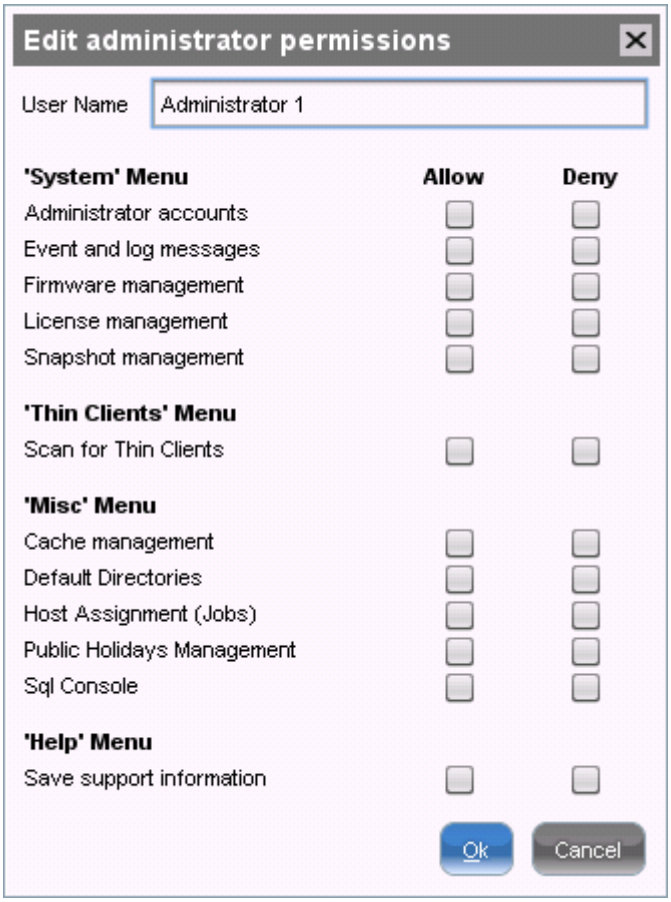


Figure 91: General administrator permissions

Administrator accounts are particularly important here. This is the system for managing authorizations itself. An administrator with this authorization can grant themselves and others rights, take away those rights and set up new accounts. This authorization should only be granted to users who are to have full access to all objects and actions in the UMS.

The individual items:

Administrator Accounts	Authorization management may be performed.
Events and messages	The event and message log may be viewed if **Logging** is enabled.
Managing firmware	Firmware versions can be imported, exported and removed from the database.
Manage Licenses	IGEL firmware licenses can be allocated to thin clients.
Manage Snapshots	Snapshots for IGEL thin clients can be registered on the UMS Server and removed again.
Scan Thin Clients	The network can be scanned for thin clients, for example if they are to be registered on the UMS Server.
Manage Cache	The UMS Server cache can be viewed, updated and deleted.
Managing public holiday lists	Public holidays can be defined in order to plan tasks.
Host assignment	Planned tasks can be assigned to various hosts.
SQL Console	The SQL Console may be run. **Warning:**The SQL Console can cause considerable damage to the database!
Default Directories	Directories and rules for automatically sorting thin clients can be created and deleted.
Saving support information	Database and server log files can be exported for support purposes.

14.2.3. Object-related access rights

Administrators and administrator groups can be granted specific rights with regard to objects in the navigation tree. These authorizations are inherited "downwards", e.g. from a folder to the thin clients within this folder.

You can change the authorization settings after selecting an object in the following ways:

- via the context menu of the object
- or via the authorization symbol in the tool bar
- or via the menu item **Edit→Authorizations**

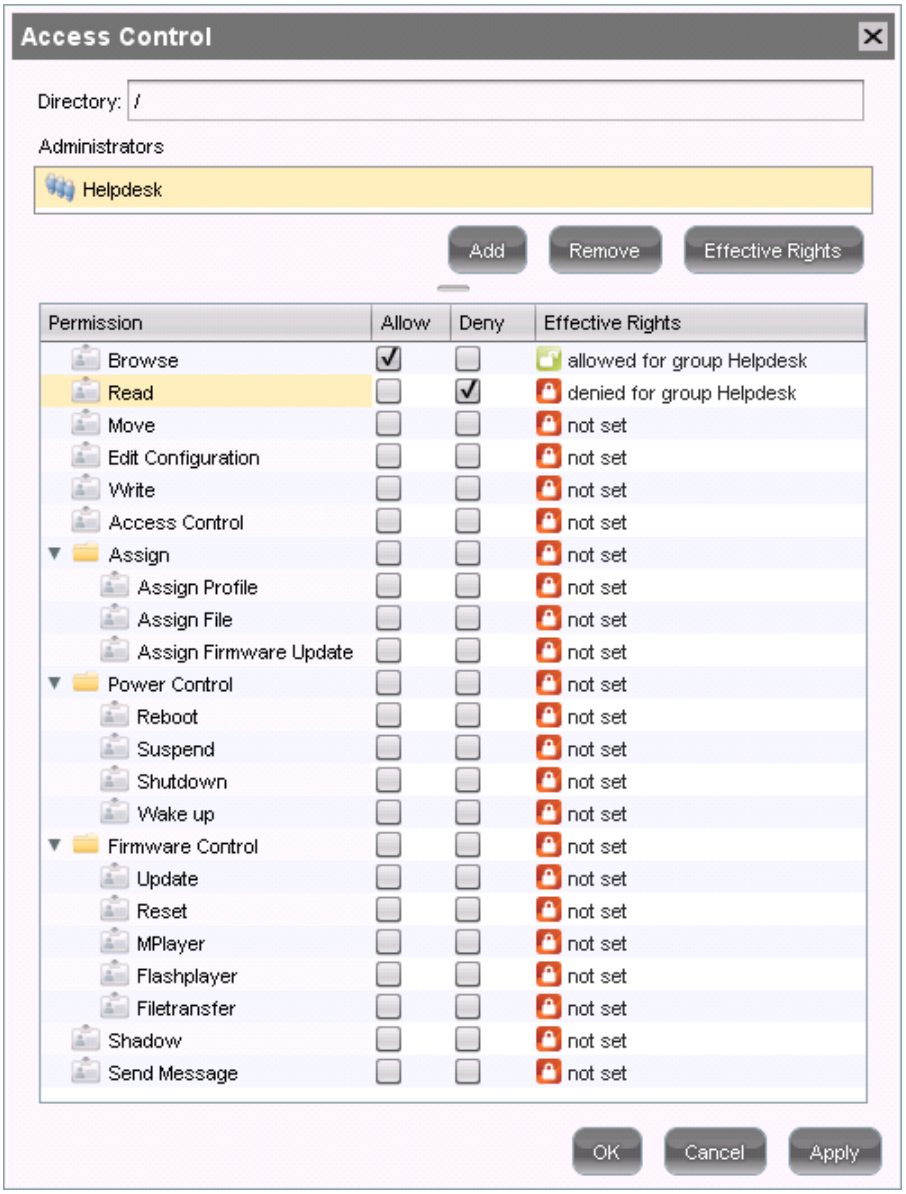


Figure 92: Object related permissions

The above list contains all object-related authorizations available in the UMS navigation tree. Only one selection is available for each selected object. For example, a view cannot be assigned updates and cannot be shut down.

Associated authorizations are automatically set together but can be changed manually later on. Enabled authorizations or denials relating to nodes affect all objects within the node.

The overview shows a selected administrator's rights to an object. Details can be found under **Effective Rights**. The rules for determining rights are also shown here, e.g. whether an authorization was granted directly or whether it is granted via a group or an inheritance within the tree structure.

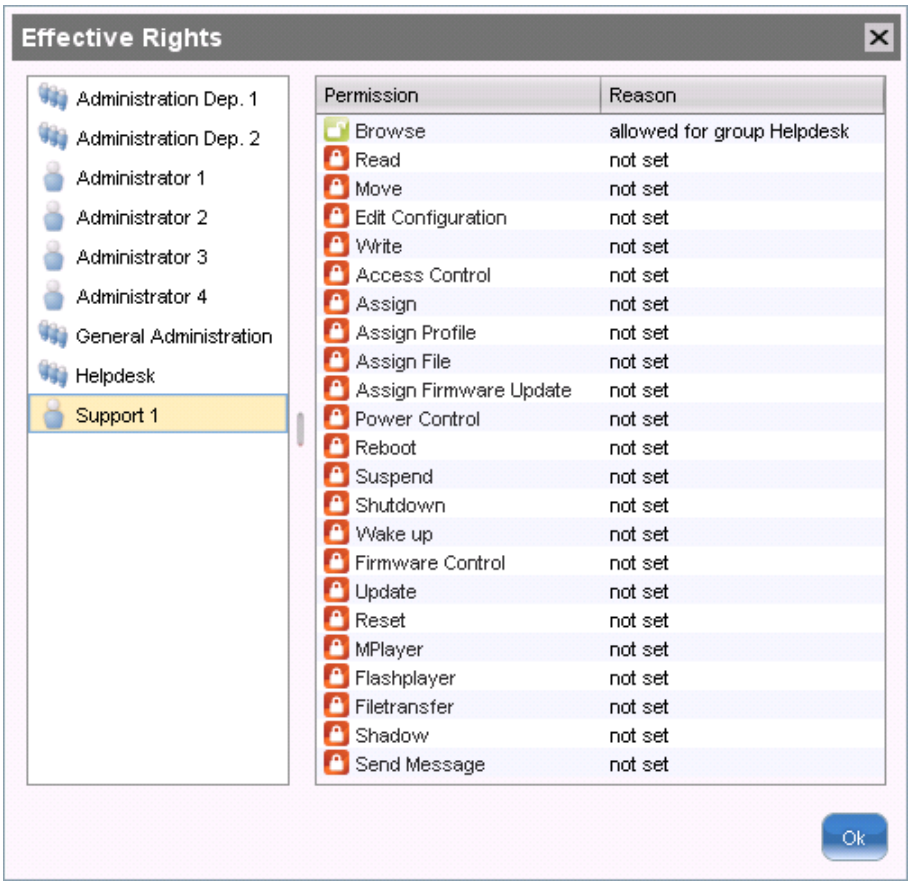


Figure 93: Effective permissions

Available rights

General	**Search**	Visibility of the object in the navigation tree (path as far as the object must also be allowed!)
	Read	Read authorization in respect of folder contents and object attributes
	Move	Thin clients can be moved without write authorization.
	Edit configuration	Write authorization for the configuration of a thin client (TC Setup)
	Write	Write authorization in respect of folders and object attributes (not TC Setup)
	Authorizations	The authorization settings for the object can be changed.
	Shadowing	VNC access to the thin client
	Send message	The thin client's message function

Assignment	Assign profile	A profile may be assigned to the object.
	Assign file	A file may be assigned to the object.
	Assign update	A firmware update may be assigned to the object.
Energy	Reboot	Rebooting the thin client.
	Idle state	Putting the thin client into the idle state.
	Shut down	Shutting down the thin client
	Wake up	Waking up the thin client using wake-on-LAN.
Firmware	Update	The firmware update may be carried out.
	Reset	Resetting the firmware to the factory defaults.
	Media Player	Downloading Media Player codec licenses.
	Flash Player	Downloading an Adobe Flash Player license.
	File transfer	An assigned file may be transferred to the thin client.

14.2.4. Access rights in the administration area

In the administration area of the console, you can **search**, **read** and **write** general authorizations and grant or deny **authorizations** for administrator accounts. Authorizations should only be granted to users who will actually perform administrative tasks on the UMS.

15. User logs

The logging system is used by the UMS and the registered thin clients in order to record all changes to the database. Only successful actions are logged. You will not find details of any errors in the log file of the UMS GUI Server.

The logging system is subdivided into two areas:

Messages: Actions initiated by a user.

Events: Actions initiated by a thin client.

15.1. Administration

The administration settings for the logging procedure are configured in the IGEL UMS Administrator under **Settings→Logging**.

Figure 94: Log configuration

- Messages can be logged either with or without details.

  There are no details for events.

- Old messages can automatically be deleted from the list. You can specify how many messages are kept and for how long. You can set up an export procedure in order to backup messages before they are automatically deleted.
- With the Log Level buttons, you can enable logging for selected commands. Logging for all possible commands is selected as standard.

Apply saves your settings and applies them for the purposes of the RMGuiServer service.

15.2. Logging dialog window

Information regarding messages and events can be displayed in the console in the following ways:

- via the System→Logging menu
- via Logging in the context menu of the directories and objects in the tree structure

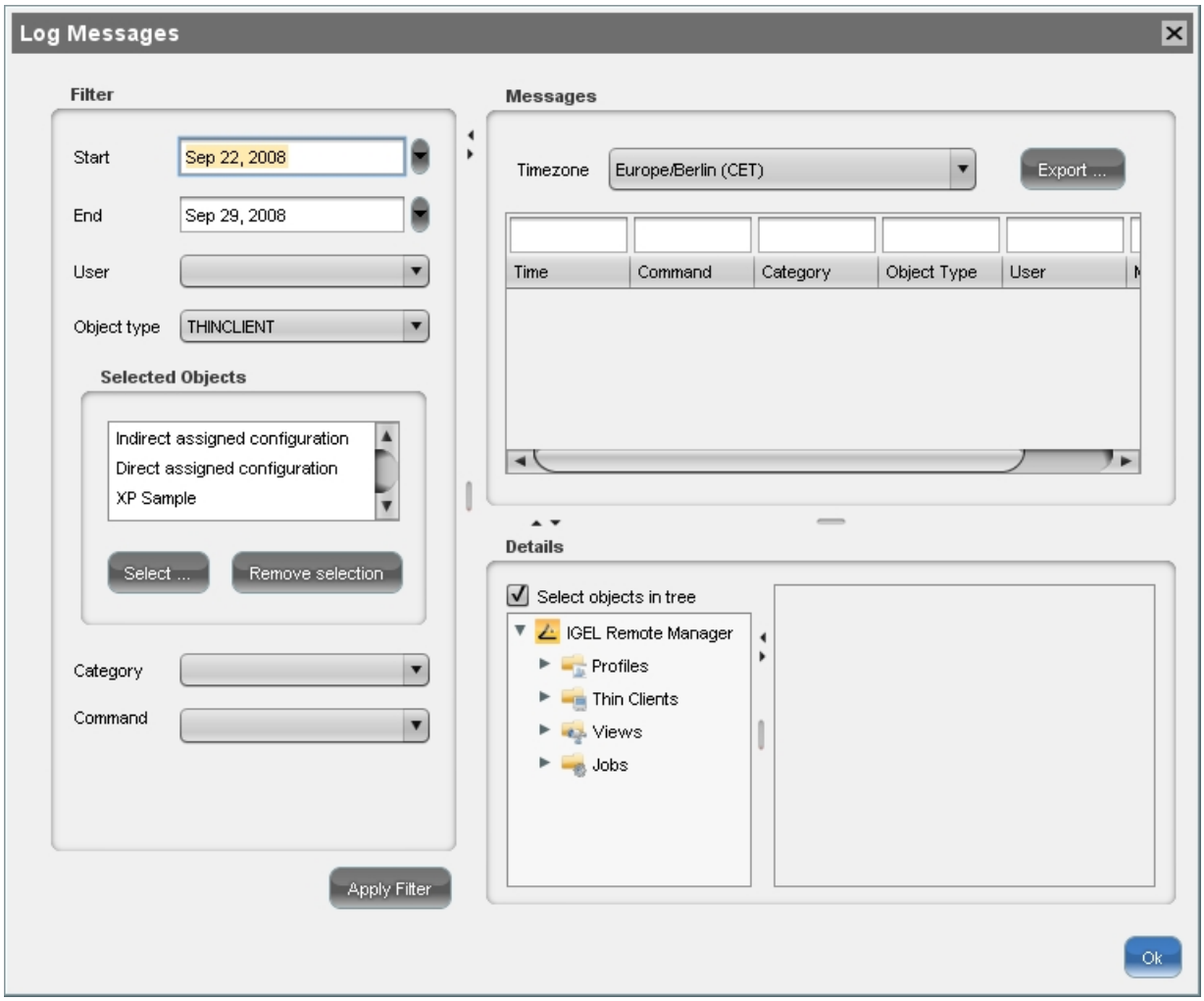


Figure 95: Message logging

15.2.1. Setting a filter

To set a filter, proceed as follows:

1. In the **Filter** window area, specify criteria in order to load a specific selection of messages from the database.

   All filter fields are combined with the operator **AND**.
   These values can be connected with the operator **OR** only if a filter field allows multiple selections, e.g. if several thin clients can be selected.

2. Click **Use Filter** to enable the new settings.

   The log messages or events will be reloaded from the database on the basis of the filter settings.

Messages/events can be exported to HTML, XML and CSV files by selecting **Export**.

Setting a filter for events

To set a filter for events, proceed as follows:

1. Specify the **command** if you know what it is.
2. Specify the **MAC address** of the thin client for which you wish to display the events.

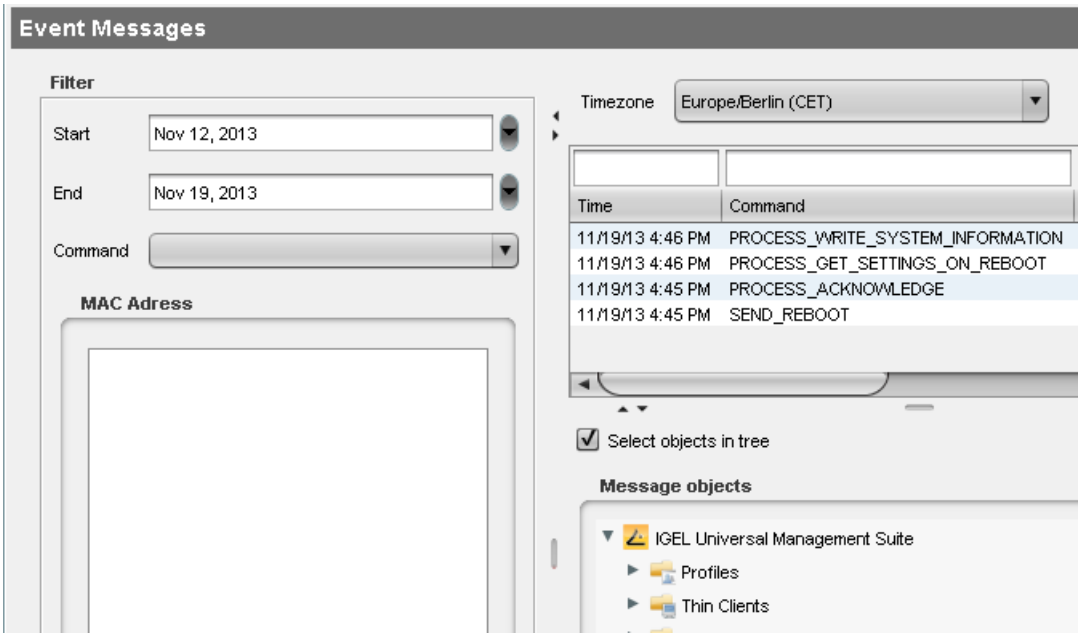


Figure 96: Event logging

Filter for messages

User	Select the name of the UMS administrator who is responsible for the message. If this field is left empty, the messages of all users will be shown.
Object type	Specify an object for which you would like to display the messages. If this field is left empty, the messages for all object types will be shown.
Category	Each command belongs to a category, e.g. security, settings and objects.
Command	If a command is known, you can specify it yourself.
Time zone	You can specify the time zone with which the logging time for messages is shown.

Setting a filter for categories

➢ To adjust the filter, select the option **Category** if you would like to select all messages for a specific category (e.g. those relating to firmware updates).

All commands within this category such as **Delete firmware update** or **Assign firmware update** will then be evaluated in order to identify the messages or events.

Comments

The quick filter does not apply to the export action.

One of the most important commands is the command `GET_SETTINGS_ON_REBOOT`. The time stamp for this command provides details of the time when the thin client last booted. This can be used to define a new **BOOT TIME** view criterion. With the help of this criterion, you can easily determine which thin clients have not been booted after a certain date.

The administration settings for the number of messages and – more importantly – for the events should be handled with great care. The higher these values are, the more space will be required for the tablespace in the database. If you enable logging, you should monitor your database closely until you are sure that sufficient space is available for the messages and/or events.

16. Log files and support

If you have problems with the IGEL UMS and contact your service provider, you can provide various UMS log files. You can easily generate these logs as a ZIP archive. To do this, select **Help→Save Support Information**.

If you are already an IGEL customer, please contact your dedicated sales partner first. They will be happy to answer any questions relating to IGEL products.

If you are currently testing IGEL products or your sales partner is unable to provide the help you need, please fill in the support form after logging in at https://www.igel.com/en/members-area/login-logout.html.

We will then contact you as soon as possible. It will make things easier for our support staff if you provide us with all the information that is available. Please see our notes regarding *support and service information https://www.igel.com/en/company/legal-documents/support-and-service-information.html* too.

You will find the IGEL Knowledge Database with user manuals, support FAQs and best practice/how-to documents at *http://edocs.igel.com http://edocs.igel.com*.

17. Optional Extensions (HA and UCB)

This appendix contains comprehensive information regarding the optional extra functions IGEL UMS High Availability Extension and IGEL Universal Customization Builder.

17.1. IGEL UMS High Availability (HA)

The optional High Availability Extension is part of the IGEL UMS from Version 4.0. It is designed to address the needs of large thin client environments in which new settings need to be rolled out to several hundred thin clients at once, or in which the fail-safe rollout of new settings is mission-critical for the organization concerned. The technical implementation is based on a network of several UMS management servers.

An upstream UMS Load Balancer takes over load distribution and thus ensures that each thin client can receive new settings at any time – even at the start of a working day when several thousand devices log on to the UMS Server simultaneously and search for new configuration profiles or firmware updates. To ensure maximum process reliability and high availability, IGEL also recommends that the UMS Load Balancer and UMS Database have a redundant design.

The High Availability Extension comes in packages of 50 licenses. All managed thin clients must be fully licensed in order to use it. Each version of the IGEL UMS 4 contains five test licenses allowing you to evaluate the function free of charge and without having to register.

> Please also see our *New Installation of an HA Network http://edocs.igel.com/index.htm#10200454.htm* Best Practice document.

17.1.1. Configuration options

In principle, you can connect as many UMS Servers and Load Balancers in an HA network as you want. However, two basic scenarios for typical applications should be described in greater detail:

- Basic high availability, e.g. to ensure the availability of user profiles (Shared Workplace) for a relatively small number of thin clients
- load distribution (network with many thin clients).

> From an IP point of view, the UMS Server and Load Balancer must be within the same network without NAT or proxies which influence communications between the components.

Basic high availability solution

To ensure that users logging in to a thin client with their AD user account can reliably receive the profile assigned to them (thin client firmware with Shared Workplace feature set), both the server and the Load Balancer must offer redundancy. The database should ideally be designed as a cluster in order to minimize potential errors.

If there are relatively few thin clients to manage in the network, load distribution can be disregarded. In this case, two server systems which can replace each other will be sufficient. The complete HA Extension, i.e. a UMS Server and a Load Balancer, is installed on each of the two systems.

The system therefore comprises the following:

- two Load Balancers which are available for thin client queries
- two UMS Servers which are available for each of the two Load Balancers
- a failsafe database, e.g. a Microsoft SQL Server cluster.

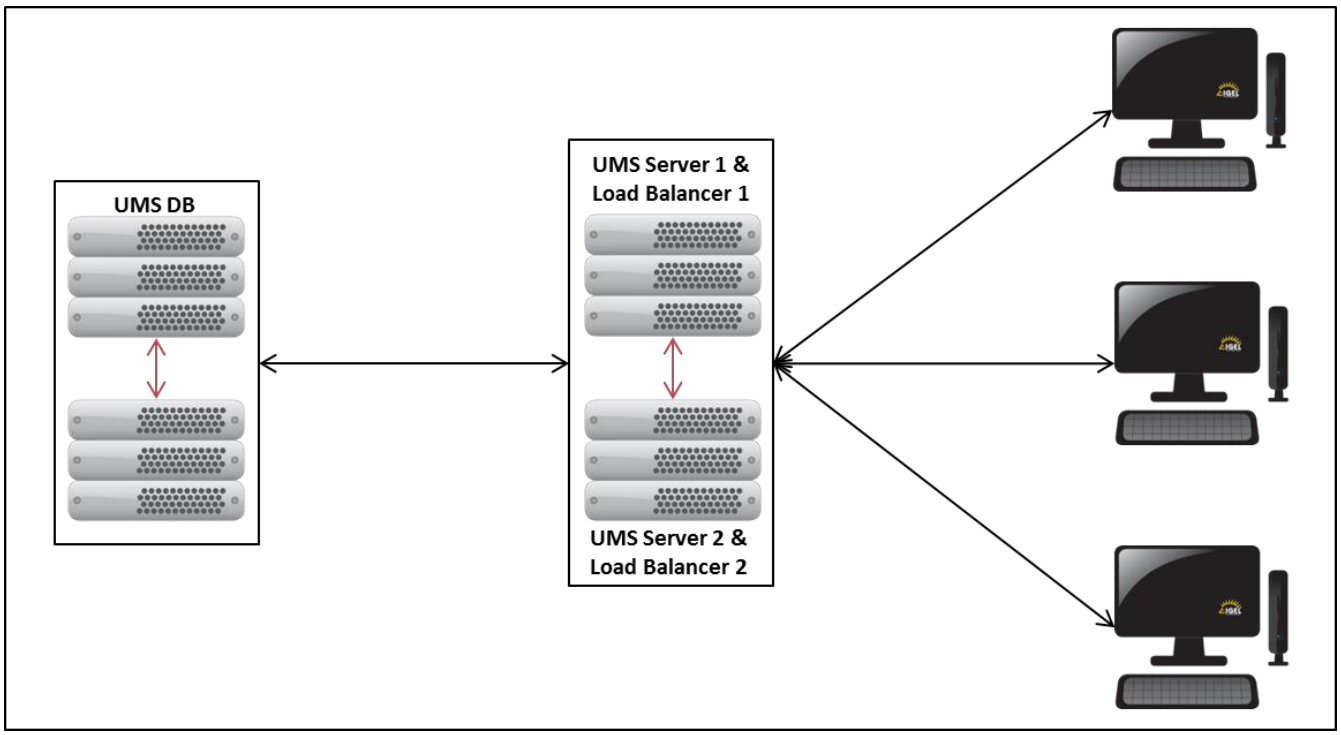


Figure 97: Basic high availability configuration

Each of the two systems can also perform the tasks as a UMS Server alone. If both systems are active at the same time, this has a certain load distributing effect, though this is relatively small. After all, the Load Balancer generates extra load along with the actual UMS Server. Consequently, UMS Servers and Load Balancers should be operated on separate systems (see *Load distribution* (page 142) below) if you need to manage a large number of thin clients.

High availability and load distribution

The smallest configuration with real load distribution comprises four to five separate server systems:

- two Load Balancers,
- two to three UMS Servers,
- a high-performance, fail-safe database (cluster).

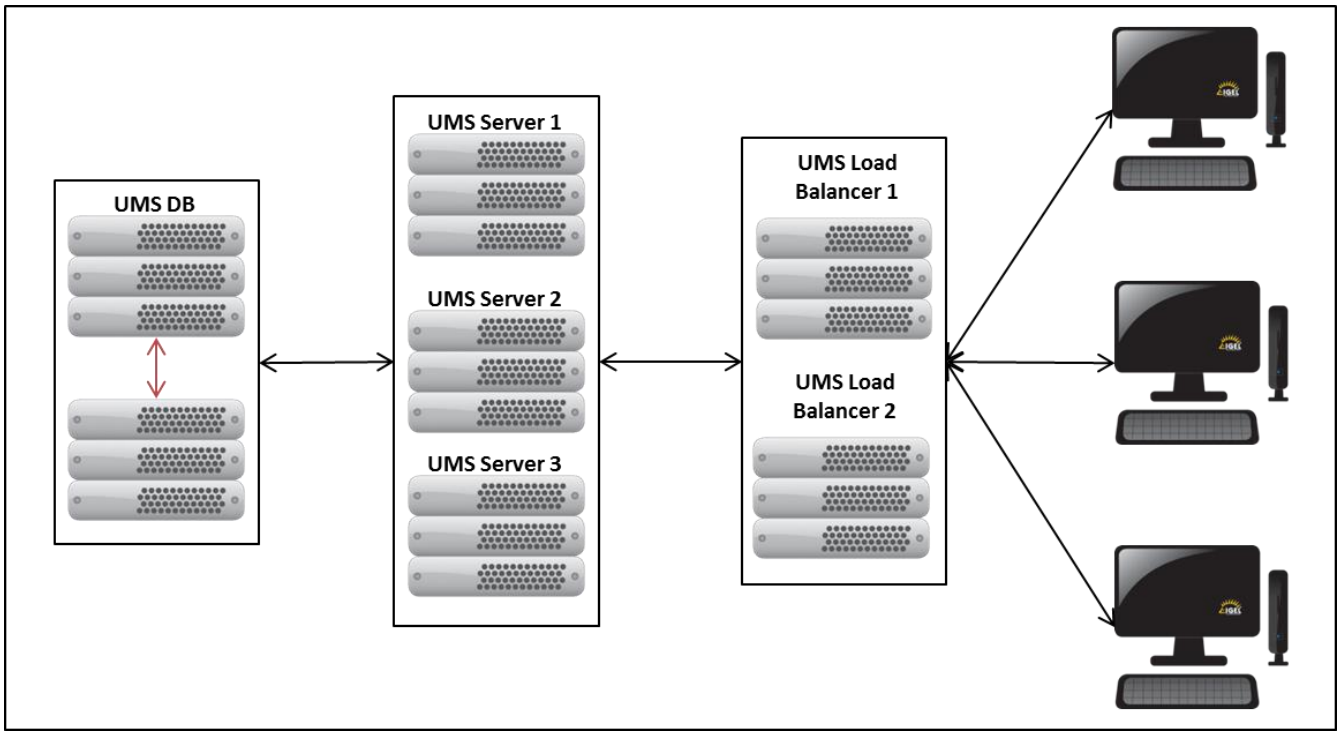


Figure 98: High availability with load balancing

Queries from the thin clients can be passed on to the UMS Servers by both Load Balancers. If one of the Load Balancers should fail, the other remains available and assumes responsibility for communications alone. Therefore, there are provisions for no more than three UMS Servers in this configuration. A greater number of servers could overload a single Load Balancer, which would itself then become s a bottleneck. For very large installations with more than three UMS Servers, the number of Load Balancers should be increased accordingly. Generally speaking, one Load Balancer alone can serve up to three servers.

Rule of thumb for sensible load distribution: One server per 2,000 managed thin clients and one Load Balancer per 5,000 thin clients.

17.1.2. HA Installation

Here, you can find out more about:

- *Installation requirements* (page 144)
- *Re-installation* (page 144)
- *Connecting external database systems* (page 15)
- *Licensing the High Availability Extension.* (page 149)

Installation requirements

In order to install an IGEL UMS High Availability network, your hardware and software must meet the following minimum requirements.

> **Warning:** The UMS Server must not be installed on a domain controller system. Manually modifying the Java Runtime Environment on the UMS Server is not recommended. Running additional Apache Tomcat web servers together with the UMS Server is not recommended either.

UMS Server installation – including individual HA network components

- Operating system: Microsoft Windows Server 2003/2008 R2
- At least 512 MB of RAM (1024 MB recommended)
- At least 400 MB of free HDD space (plus database system)

> If you use Windows Server 2008 R2, please ensure that the 32-bit compatibility mode is active before installing the UMS.

Installing the UMS Console

- At least 256 MB of RAM (512 MB recommended)
- At least 50 MB of free HDD space
- Java Web Start Console: Java 1.8.0_40 or newer required
- For details of the supported operating systems, please see the UMS Data Sheet on the IGEL website.

Database systems (DBMS)

For details of the supported database systems, please see the UMS Data Sheet on the IGEL website. Details of the requirements when installing and operating the database can be found in the documentation for the particular DBMS.

From an IP point of view, the UMS Server and Load Balancer for high availability (*High Availability* (page 141), HA) must be within the same network without NAT or proxies which influence communication between the components.

The internal database (Embedded DB) **cannot** be used for an HA network. You can also use the Embedded Database for a dedicated test installation with only a single server for the UMS Server and Load Balancer. However, you cannot use this to set up a real HA network.

Installing a simple high availability solution

To use the High Availability Extension, please select the option for installing the HA network components (UMS Server and UMS Load Balancer).

This example describes the procedure for installing a simple high availability solution. The UMS Server and Load Balancer are therefore installed on each of the servers. If your required installation differs, you can select individual components accordingly.

First server in the HA network

To install the first server in the HA network, proceed as follows:

1. Download the current version of the IGEL Universal Management Suite from the IGEL Download Server.
2. Launch the installer by executing the EXE file.

   You will need administration rights for the computer in order to install the IGEL UMS.

3. Close any other applications and confirm that you have done so.
4. Read and confirm the license agreement.
5. Read the explanation of the installation process.
6. Select a path for the installation.
7. Select the type of installation (in this case: HA network with server and Load Balancer).
8. Confirm the message regarding licensing of the HA Extension.
9. Enable the option for creating an IGEL network token.
10. Specify a location for saving the token.
11. Choose a name for the entry in the Windows Start Menu.
12. Read the summary and start the installation process.
13. Close the program once installation is complete.

    If you have chosen to install a UMS HA network, the IGEL Universal Management Suite server as well as a Load Balancer will now run on this computer.

The Windows installer creates entries in the Windows software directory and the Start Menu. An icon for launching the UMS Console will also be placed on the desktop.

Warning: The IGEL network token is required when installing further servers. Make sure that it is well protected.

Warning: The IGEL network token will be needed for all subsequent server installations. Please keep it safe.

Further servers

Further UMS Servers can be installed in the same way as the first. However, you do not need to create a new network token. Instead, you select the token created previously on the first server during installation to allow new servers to be integrated into the HA network. You should therefore save the token on a storage medium which is accessible to the server (e.g. on the network or on a portable storage medium such as a USB stick) before installation.

In addition, a connection with the same UMS Database that is used by the first server must be established after installing a further UMS Server. The UMS HA network only works if all servers are connected with the same database.

To install further servers, proceed as follows:

1. Download the current version of the IGEL Universal Management Suite from the IGEL Download Server.
2. Launch the installer by running the `EXE` file.

   You will need administration rights for the computer in order to install the IGEL UMS.

3. Close any other applications and confirm that you have done so.
4. Read and confirm the license agreement.
5. Read the explanation of the installation process.
6. Select a path for the installation.
7. Select the type of installation (in this case: HA network with server and Load Balancer).
8. Confirm the message regarding licensing of the HA Extension.
9. Disable the option for creating an IGEL network token.
10. Select the token to be used.
11. Optional: Load a `tc.keystore` file.
12. Choose a name for the entry in the Windows Start Menu.
13. Read the summary and start the installation process.
14. Close the program once installation is complete.

For additional HA servers, you must enter and enable the data source in the following way:

1. Launch the UMS Administrator:
2. Create a data source and enter exactly the same parameters as the ones used by Server 1.
3. Activate the new data source.
4. Close the UMS Administrator.

If you have chosen to install a UMS HA network, the IGEL Universal Management Suite server as well as a Load Balancer will now run on this computer.

The Windows installer creates entries in the Windows software directory and the Start Menu. An icon for launching the UMS Console will also be placed on the desktop.

Warning: The IGEL network token is required when installing further servers. Make sure that it is well protected.

Installing individual HA network components

The procedure for installing UMS HA network components separately is similar. Here too, a network token is created when installing the first components (server or Load Balancer) and is used when installing further components.

If a UMS Server is installed individually, the UMS Console and UMS Administrator applications for managing the installation are available on the system in addition to the server services. After configuring and enabling the HA network database via the UMS Administrator, the server will be available in the HA network.

If you install an individual Load Balancer, only its service will be installed and automatically launched. Only the option for uninstalling the Universal Management Suite will then be set up in the Windows Start Menu. No configuration on the Load Balancer is necessary. It connects automatically to the HA network during booting.

Connecting to External Database Systems

You will find details of the supported database systems and the HA Extension in the IGEL UMS Data Sheet and on the IGEL website respectively. Details of the requirements when installing and operating the database can be found in the administration manual for the particular DBMS.

➢ To configure the database, use the relevant DBMS management program.

The configuration for setting up the data source and connecting the UMS to the database should be carried out in the UMS Administrator.

All UMS Servers must work with the same database.

Oracle

To integrate Oracle, proceed as follows:

1. Set up a new database user with `Resource` authorization.
2. Set up a new Oracle type data source in the UMS Administrator.

A number of Oracle versions set up the `Resource` role without `CREATE VIEW` authorization. Please ensure that this authorization is set for the role.

Microsoft SQL Server

To connect the Microsoft SQL Server, proceed as follows:

1. Open the SQL Console of the SQL Server by selecting **New Query**.
2. Use the following script as a template, change it as necessary and then execute it.

To avoid problems when enabling the data source, ensure that `LOGIN`, `USER` and `SCHEMA` are the same.

   ```
   CREATE DATABASE rmdb
   GO
   USE rmdb
   GO
   CREATE LOGIN igelums with PASSWORD = 'setyourpasswordhere',
   DEFAULT_DATABASE=rmdb
   GO
   CREATE USER igelums with DEFAULT_SCHEMA = igelums
   GO
   CREATE SCHEMA igelums AUTHORIZATION igelums GRANT CONTROL to igelums
   GO
   ```

3. Set up a new `SQL Server` type data source in the UMS Administrator.

4. Ensure that the **server port** of the SQL Server is configured correctly in the data source. The default value is `1433`.

   The Microsoft SQL Server should allow **Windows and SQL authentication**.

PostgreSQL

IGEL UMS uses PostgreSQL functions (from Version 8.2). Older versions are not supported.

When installing a new instance of the PostgreSQL database, set the following parameters:

1. Install the database cluster with `UTF-8` **coding.**
2. Accept the conditions for all **addresses**, not just `localhost`.
3. Activate **Procedural Language** `PL/pgsql` in the default database.

   For further information regarding installation of the PostgreSQL database, see http://www.postgresql.org.

Once installation is complete, carry out the following configuration procedure:

1. Change the server parameters: The parameter `listen_addresses` in the file `postgresql.conf` must contain the host name of the IGEL UMS Server **OR** `'*'` in order to allow connections to each host.
2. Set up a `host` parameter in the file `pg_hba.conf` in order to give the UMS Server the authorization to log in using the user data defined there.

   > If the IGEL UMS Server is installed on the same machine as the PostgreSQL Server, no changes to these files are needed.

3. Launch the administration tool pgAdmin.
4. Create a new login role with the name `rmlogin`.
5. Create a new database with

   name = `rmdb`
   owner = `rmlogin`
   encoding = `UTF-8`

6. Set up a new schema within the rmdb database with

   name = `rmlogin`

7. Check whether the language plpgsql is available in the rmdb database.

   If not, set it up.

8. In the **UMS Administrator**, create a new `PostgreSQL`-type data source with the host name of the PostgreSQL Server and the correct server port (default is `5432`), user `rmlogin` and database `rmdb`.

Apache Derby

As with other external databases, we recommend that you create a new database instance for use by the IGEL UMS.

Perform the following steps to create a new database instance and define the instance as a data source in the **UMS Administrator**:

1. For security purposes, enable **User Authentication** in the Derby DB.
2. Launch the ij Utility (in `[derby-installation-dir]/bin`).
3. To create the rmdb instance, execute the following command:

   ```
   connect
   'jdbc:derby:rmdb;user=dbm;password=dbmpw;create=true';
   ```

4. Define the UMS database user `rmlogin` with passwordi `rmpassword`

   ```
   CALL SYSCS_UTIL.SYSCS_SET_DATABASE_PROPERTY('derby.user.rmlogin',
   'rmpassword');
   ```

5. Exit ij and launch the Derby Network Server.
6. In the **UMS Administrator**, create a new `Derby`-type data source with the host name of the Derby Server and the correct server port (default is `1527`), user `rmlogin` and database `rmdb`.

   For further information regarding installation of the Derby database, see http://db.apache.org/derby.

Licensing the High Availability Extension

The HA network must be licensed in order to use it. For a basic installation, you will receive a license for five thin clients managed by the UMS to enable you to carry out basic tests, e.g. with IGEL test set-ups. If you require licenses for further thin clients, please contact your IGEL reseller.

➢ You should register the license file you receive in the UMS Console under **System→Manage Licenses**.

The license status is shown in the administration area of the console under **Global Configuration→License Configuration**.

17.2. IGEL Universal Customization Builder (UCB)

With the Universal Customization Builder (UCB), the firmware for IGEL Universal Desktop thin clients can easily and reliably be expanded and adapted to meet your needs. For example, you may choose to install local device drivers or special applications. You can even set important Windows registry keys – with no detailed knowledge of Shell or Windows scripting.

The IGEL Universal Customization Builder (UCB) is an optional extension of the IGEL Universal Management Suite (UMS) which enables you not only to put together individual expansion packages for the IGEL Universal Desktop firmware, but also to package them and roll them out on a centralized basis. Numerous helpful features such as predefined templates, the user-friendly GUI or IGEL helpdesk support make this reliable application easy to use. The UCB supports all IGEL Universal Desktop thin clients with Linux and Windows Embedded – including PCs and thin clients which were standardized with the help of the IGEL Universal Desktop Converter 2 (UDC2) migration software.

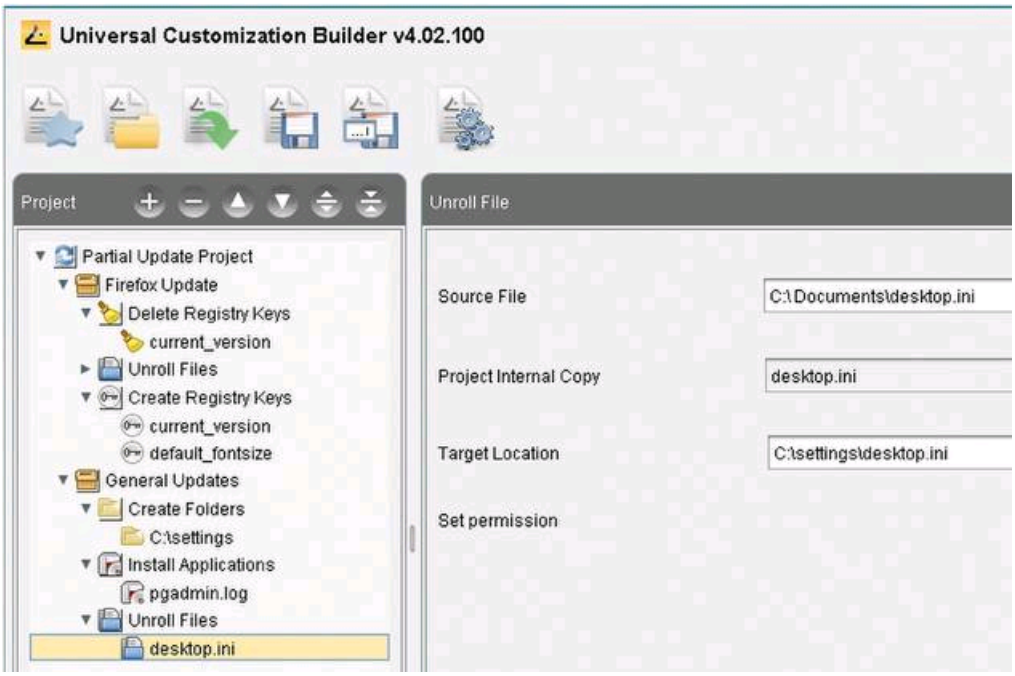


Figure 99: IGEL UCB

Typical usage scenarios:

- Supplementing local apps: Rolling out applications for local operations, e.g. checkout software for retailers and other sector-specific software, on a centralized basis
- Upgrading device drivers: For sector-specific peripherals or original drivers
- Setting registry keys: Individually adapting Windows Embedded Standard
- Kiosk systems: Equipping thin clients with special local applications or software clients in order to operate them independently of the company network, e.g. as time recording terminals

Features:

- Simple procedures for generating, packing and rolling out firmware expansion packages for IGEL Linux (custom partition) and Windows Embedded Standard (partial update).
- Predefined templates: Task-oriented for typical application scenarios
- Debugging: Automatic package creation with syntax checks
- Automatic versioning within customization projects
- Support for the packages created available from the IGEL help desk

Your benefits:

- Reduced project costs: With the UCB, you can now perform firmware expansions quickly and easily yourself (without assistance from an external service provider)
- Ease of use: User-friendly GUI with the familiar look and feel of the IGEL UMS, no detailed knowledge of Shell or Windows scripting necessary (templates)
- Quick, low-cost rollout: Convenient, remote rollouts using IGEL UMS (comes supplied with all IGEL Universal Desktop thin clients)
- Reliable processes and functions: User prompting via GUI and templates, simple debugging and support from IGEL
- Transparency: Automatic versioning within customization projects

Warning: Before distributing changes to your actual systems, it is important to test partial updates or customer-specific partitions on one or more thin clients to ensure that they are stable and function correctly!

17.2.1. Requirements

IGEL Customization Builder is part of the IGEL Universal Management Suite from Version 4.03.200 onwards (Windows only). The system requirements for the particular UMS version used apply in each case.

17.2.2. Licensing

A UCB license is required to use the optional UCB extension for the IGEL Universal Management Suite (UMS). In order to obtain this license, you must successfully take part in a paid IGEL UCB training course (in-house or classroom training).

The license is registered in the administration area of the UMS Console under **Global Configuration→License Configuration.**

17.2.3. Partial update for IGEL thin clients with Windows Embedded Standard

A partial update is a collection of tasks which are grouped together in a script. This script is sent to the thin clients together with the files that are to be distributed. The script is executed on the thin client and works through the pre-defined tasks.

Various tasks such as distributing files, setting up registry keys, executing commands and many others can be defined for a partial update. Similar tasks of the equivalent type are grouped together in sections. A project can contain a number of partial updates with various sections and tasks. Using the import function, a number of partial updates can be brought together to form a project.

An example is shown here:

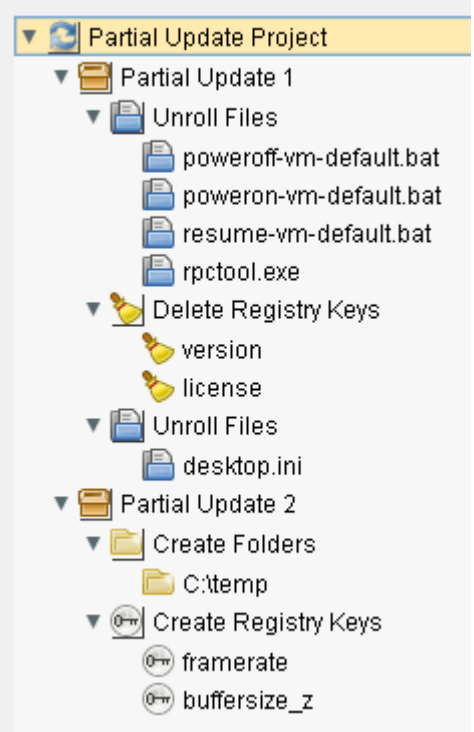


Figure 100: Partial update project

The following types of tasks (sections) are available in projects:

- Roll out file
- Create directory
- Set rights
- Delete file/directory
- Create registry key
- Roll out registry file
- Delete registry key
- Install application
- Execute command

When a project is being "built", all necessary scripts are generated and stored together with the required source files in a selectable project directory.

Warning: Before distributing changes to your actual systems, it is important to test partial updates or customer-specific partitions on one or more thin clients to ensure that they are stable and function correctly!

Project functions

Launch the Universal Customization Builder in the UMS Console via **System→Open Customization Builder**.

The following functions are available for a partial update project:

Create new project (Ctrl+n)

1. Opened projects are saved.
2. The setup dialog opens.
3. Enter a **project name**.
4. Select a **project directory** for the project; a sub-folder bearing the project name and containing all project files will be set up in it.
5. Select **Partial Update** as the project type.
6. Click **OK**.

Load project (Ctrl+o)

1. Opened projects are saved.
2. The selection dialog opens.

Select a project file (partial update project `.ipu`).

1. Click **Open**.

Save current project (Ctrl+s)

➢ Saves the project as it is at the time in the project directory.

Save current project as...

1. The setup dialog opens.
2. Enter a **project name**.
3. Select a **project directory** for the project; a sub-folder bearing the project name and containing all project files will be set up in it.
4. Click **OK**.

➢ A copy of the current project with all files will be saved under the new name in the selected directory.

Close current project (Ctrl+0)

The current project is saved and then closed.

Import project (partial update only) (Ctrl+i)

1. The selection dialog opens.
2. Select a project file (`.ipu`).
3. Click **Open**.

➢ All parts of the selected project will be added to the current project.

Build current project (Ctrl+b)

1. The selection dialog opens.
2. Select a destination directory for the partial update.

   Warning - All files in the destination directory will be deleted!

3. Click **Open**.

➢ All scripts and files to be sent to the thin client will be stored in the destination directory. Once the process has been completed successfully, the destination directory will contain the finished partial update for distribution to the thin clients.

Add element (Insert)

➢ Sets up a new element depending on the current element type.

Delete element (Delete)

Deletes the selected elements.

Move element upwards (Page Up)

➢ Moves the selected element up one position.

Move element downwards (Page Down)

➢ Moves the selected element down one position.

Open all elements

➢ Opens all tree nodes.

Close all elements

➢ Closes all tree nodes.

Transferring the partial update

To transfer partial updates to the system, proceed as follows:

1. Launch the thin client configuration (locally or in the UMS).
2. Select **System→Updates→Partial Update**.
3. Check the **Partial Update** checkbox.
4. Select a transfer protocol (HTTP, FTP, FILE).
5. Specify the source server/path on the drive (destination directory for the partial update project).
6. If necessary, enter the relevant login data.
7. Click **Apply** to save the settings.
8. Click **Search for Updates** in order to search the source for available updates (only locally on the thin client).

Available updates can then be installed directly. The device will reboot for this purpose. It will also reboot after the update has been installed.

In the UMS, you can launch the distribution of the partial update via the thin client's context menu (**Commands→WES→Partial Update**) or set up a planned task which will perform the distribution on a scheduled basis.

17.2.4. Own partition for thin clients with IGEL Linux

A custom partition project creates an archive which, on thin clients with IGEL Linux, is converted into a partition on the data medium. The files to be saved in this partition are also contained in the project archive.

A custom partition project in the Universal Customization Builder consists of a single node. A custom partition is created in just a few steps:

1. Select the directory with the files to be transferred.
2. Launch the project building process.
3. Select the path on which the compressed archive file is to be saved.

> **Warning**: Before distributing changes to your actual systems, it is important to test partial updates or customer-specific partitions on one or more thin clients to ensure that they are stable and function correctly!

Project functions

Launch the Universal Customization Builder in the UMS Console via **System→Open Customization Builder**.

The following functions are available for a custom partition project:

Create new project (Ctrl+n)

1. Opened projects are saved.
2. The setup dialog opens.
3. Enter a **project name**.
4. Select a **project directory** for the project; a sub-folder bearing the project name and containing all project files will be set up in it.
5. Select **Custom Partition** as the project type.
6. Click **OK**.

Load project (Ctrl+o)

1. Opened projects are saved.
2. The selection dialog opens.
3. Select a project file (custom partition project `.icp`).
4. Click **Open**.

Save current project (Ctrl+s)

➢ Saves the project as it is at the time in the project directory.

Save current project as...

1. The setup dialog opens.
2. Enter a **project name**.
3. Select a **project directory** for the project; a sub-folder bearing the project name and containing all project files will be set up in it.
4. Click **OK**.

➢ A copy of the current project with all files will be saved under the new name in the selected directory.

Close current project (Ctrl+0)

The current project is saved and then closed.

Build current project (Ctrl+b)

1. The selection dialog opens.
2. Select a destination directory for the custom partition.

   Warning - All files in the destination directory will be deleted!

3. Click **Open**.

All scripts and files to be sent to the thin client will be stored in the destination directory. Once the process has been completed successfully, the destination directory will contain the finished custom partition for distribution to the thin clients.

Transferring the customer's own partition

To transfer partial updates to the system, proceed as follows:

1. Launch the thin client configuration (locally or in the UMS).
2. *Enable* the customer's own partition and specify the partition size.
3. Specify the destination directory for the project as the *download source* for the partition.
4. If necessary, specify the *actions* to be performed when mounting or unmounting the partition.
5. Apply the settings for the thin client.

Enabling the partition

The customer partition is disabled by default.

➢ Click on **System→Firmware Configuration→Own Customer Partition→Partition** in the setup to enable the customer partition in the IGEL setup for the thin client (or with the IGEL Universal Management Suite) via the setup path.

The size of the partition is shown in the form of a numerical value (bytes) followed by a multiplier.

Sensible figures are for example 100 K (for 100 KiB = 100 * 1024 bytes) or 100 M (for 100 MiB = 100 * 1024 * 1024 bytes).

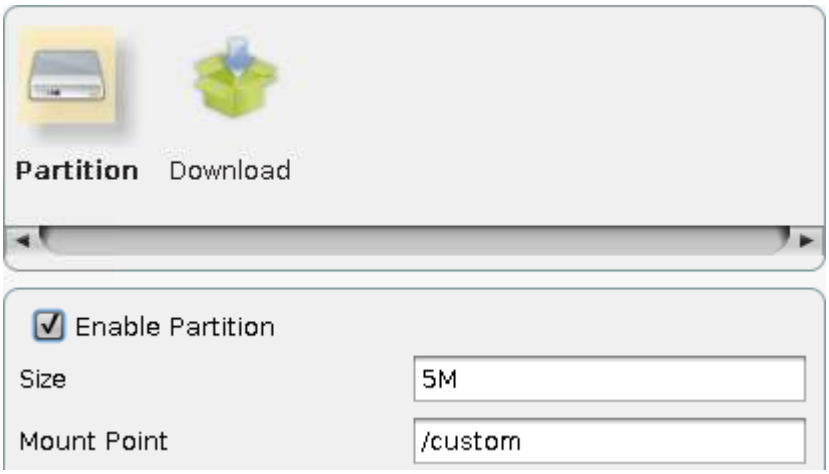


Figure 101: Activating customer-specific partition

The size of the partition should be set to at least 100 KiB. However, no more than 300 MiB should be reserved for the customer-specific partition (based on the 1 GB standard CF used in IGEL Linux thin clients). This is because subsequent firmware updates may require more storage space than the current version.

Figure 102: System feedback

➢ Click on **Apply** or **OK** in order to confirm your settings.

The partition will be created and mounted at the specified location.

A status window provides information on the process and gives details of any errors when creating the partition. If for example there is insufficient space on the storage medium, it will not be possible to create the partition.

Figure 103: Error messages

If you attempt to change the size of a previously created customer partition, you may find that you are unable to do so if a process is still accessing the partition, e.g. if its content is still being shown in the terminal window.

Defining download source

In order to load data onto the customer partition, at least one source for partition data must be specified in the Download area.

➢ Click on **Add**.

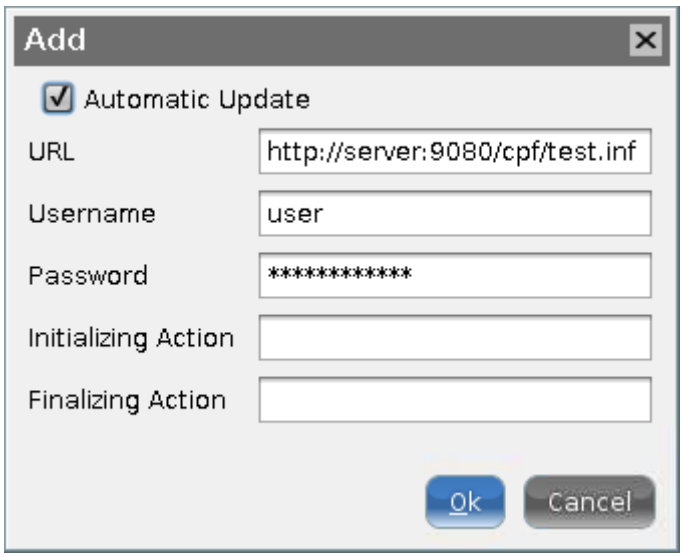


Figure 104: Defining download source

The transfer protocols are the same as the ones for updating the firmware, e.g. HTTP, HTTPS, FTP. An `INF` file which in turn references a tar archive zipped using bzip2 must be given as the target.

The structure of the INF file is as follows:

`[INFO], [PART]`	Header information
`file="test.tar.bz2"`	Zipped tar archive
`version="1"`	Version of the file

The files to be transferred must therefore be zipped in a `tar` archive which is then compressed using `bzip2`. This file is referenced in the INF file which is the target of the URL.

The `tar` archive can be created under Windows, e.g. with the open source program 7-Zip (www.7-zip.org). This program also allows `bzip2` compression. Under Linux, `tar` and `bz2` files can often be created using onboard resources.

The procedure makes it possible to replace the file(s) on the server with a new version which the thin client loads the next time it is booted. The `Version` parameter in the `INF` file must be increased for this purpose.

Carrying out actions

Once the customer partition has been mounted or unmounted, commands (Shellscript) can automatically be executed. For example, a program loaded to the partition can be launched or closed upon shutdown (the partition will be unmounted again in the process).

18. Glossar

Active Directory (AD)

Active Directory (AD) implements Microsoft's LDAP directory services for Windows environments. Active Directory allows administrators to assign company-wide rules, distribute software to Windows computers and install important system updates throughout the IT infrastructure. All data and settings for an Active Directory organization are stored in a central database. The organization of an Active Directory can comprise anywhere from a few hundred to several million objects.

Lightweight Directory Access Protocol (LDAP)

Lightweight Directory Access Protocol (LDAP) is a network protocol for querying or modifying directory services via TCP/IP. A directory is a set of information with similar attributes, organized into a logical and hierarchical structure. A familiar example is a telephone directory which is made up of an alphabetical list of names along with the relevant telephone numbers and addresses.

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